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General and Mechanical (4,417,359)	1721
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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty Information

For information concerning the PCT member countries see the notice appearing in the Official Gazette at 1017 O.G. 10 on Apr. 13, 1982. For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States, see the notice in the Official Gazette of Sept. 28, 1982 at 1022 O.G. 52.

Note that the domestic PCT fees have been increased as of Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published at 1021 O.G. 11 on Aug. 10, 1982. Also note that the international PCT fees have changed as of Jan. 1, 1983 and the Search Fee for the European Patent Office as Searching Authority changed as of Jan. 22, 1983. The notice regarding the change in international fees and the Search Fee for the European Patent Office appeared at 1025 O.G. 27, on 28 Dec. 1982. The current schedule of fees is as follows:

Transmittal fee	$ 125.00
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• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	670.00
International Fees	
Basic Fees (first 30 pages)	265.00
Basic Supplemental Fee (for each page over 30)	5.00
Designation fee (for each national or regional office)	65.00

GERALD J. MOSSINGHOFF,
Commissioner of Patents and Trademarks.

Dec. 3, 1982.

Board of Appeals Decisions Rendered in the Month of Oct. 1983

Affirmed	141
Affirmed in part	18
Reversed	48
Total	207

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.21(b)).

4,219,017, Re. S.N. 467,642, Filed Feb. 18, 1983, Cl. 128/204.26, PILOT REGULATOR, Ralph F. Osterhout, et al., Owner of Record: *Bank of the West, Palo Alto, Calif.,* Attorney or Agent: David R. Murphy, Ex. Gp.: 335

4,240,149, Re. S.N. 532,347, Filed Sept. 15, 1983, Cl. 364/483, MEASURING SYSTEM, David L. Fletcher, et al., Owner of Record: *Leeds & Northrup Co., North Wales, Pa.,* Attorney or Agent: Harold Huberfeld, Ex. Gp.: 232

4,289,138, Re. S.N. 499,803, Filed June 1, 1983, Cl. 128/803, ELECTRODE ASSEMBLY FOR TEMPORARY PACING AND HEART MEASUREMENTS, Kenneth Halvorsen, Owner of Record: *Mansfield Scientific, Inc., Mansfield, Mass.,* Attorney or Agent: Richard A. Wise, et al., Ex. Gp.: 355

4,369,727, Re. S.N. 533,442, Filed Sept. 19, 1983, Cl. 114/297, ANCHOR, Rudolph Fasco, Owner of Record: *Inventor,* Attorney or Agent: John H. Oltman, et al., Ex. Gp.: 315

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

4,289,856, Reexam. No. 90/000,464, Requested: Oct. 28, 1983, Cl. 521/51, PROCESS FOR PREPARING NON-YELLOWING INTEGRAL-SKINNED POLYURETHANE FOAM USING A POLYOL HAVING A FUNCTIONALITY OF 4 TO 8, Masaki Yamamoto, et al., Owner of Record: *Toyo Rubber Industry Co. Ltd., Osaka, Japan,* Attorney or Agent: Sughrue, Mion, et al., Ex. Gp.: 143, Requester: Cushman, Darby & Cushman, Washington, D.C.

National Technical Information Service

U.S. GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Government Inventions and Patents
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Program Coordinator,
Office of Government Inventions and Patents
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-509,091. SHIELDED SNIFFING DEVICE.

DEPARTMENT OF THE AIR FORCE

SN 6-195,693 (4,392,775). FLAT WORKPIECE PICK-UP.

SN 6-201,860 (4,392,709). METHOD OF MANUFACTURING HOLOGRAPHIC ELEMENTS FOR FIBER AND INTEGRATED OPTIC SYSTEMS.

SN 6-232,094 (4,392,624). IMPLANTED BOUNDARY LAYER TRIP.

SN 6-283,245 (4,395,469). LOW PRESSURE NICKEL HYDROGEN BATTERY.
SN 6-300,761 (4,391,660). COPPER CONTAINING BALLISTIC ADDITIVES.
SN 6-300,762 (4,395,684). R.F. PRIMED PLASMA LIMITER FOR RADAR RECEIVER PROTECTOR.
SN 6-307,347 (4,393,198). COPOLYMERS FROM OCTAFLUORONAPHTHALENE.
SN 6-308,973 (4,394,223). TIN AND GOLD PLATING PROCESS.
SN 6-368,785 (4,393,997). REMOVABLE SECONDARY AIRCRAFT FUEL ENCLOSURE.
SN 6-387,580 (4,393,101). DIETHYNYLBENZENE-ETHYNYLPYRENE COPOLYMERS.

DEPARTMENT OF THE ARMY

SN 4-578,938 (4,354,192). RADIO RANGING.
SN 5-953,292 (4,369,811). NULL BALANCING FOR FLUIDIC SENSORS AND AMPLIFIERS.
SN 6-074,634 (4,357,713). METHOD AND APPARATUS FOR REDUCTION OF MODAL NOISE IN FIBER OPTIC SYSTEMS.
SN 6-111,738 (4,373,553). BROAD BAND FLUERIC AMPLIFIER.
SN 6-133,735 (4,335,655). METHOD AND APPARATUS FOR DETONATING EXPLOSIVE IN RESPONSE TO DETONATION OF REMOTE EXPLOSIVE.
SN 6-142,548 (4,362,106). FLOW DEFLECTOR FOR AIR DRIVEN POWER SUPPLY.
SN 6-153,461 (4,350,315). DEVICE TO DE-SPIN OBJECTS WITH VERY HIGH SPIN.
SN 6-158,556 (4,345,460). MULTI-CALIBER PROJECTILE SOFT RECOVERY SYSTEM.
SN 6-169,004 (4,341,158). APPARATUS FOR ELIMINATING POWER SOURCE RISE TIME EFFECTS IN A TIME FUZE SYSTEM.
SN 6-175,543 (4,367,474). FREQUENCY-AGILE POLARIZATION DIVERSE MICROSTRIP ANTENNAS AND FREQUENCY SCANNED ARRAYS.
SN 6-176,319 (4,348,649). MICROWAVE POWER PULSE GENERATOR.
SN 6-198,673 (4,379,296). SELECTABLE-MODE MICROSTRIP ANTENNA AND SELECTABLE-MODE MICROSTRIP ANTENNA ARRAYS.
SN 6-216,232 (4,375,082). HIGH SPEED RECTANGLE FUNCTION GENERATOR.
SN 6-217,881 (4,381,002). FLUIDIC-CONTROLLED OXYGEN INTERMITTENT DEMAND FLOW DEVICE.
SN 6-230,177 (4,360,896). WRITE MODE CIRCUITRY FOR PHOTOVOLTAIC FERROELECTRIC MEMORY CELL.
SN 6-278,263 (4,382,678). MEASURING OF FEATURE FOR PHOTO INTERPRETATION.
SN 6-290,138 (4,392,348). DEVICE FOR BLEEDING MOTOR GASES THRU MOTOR POLE PIECE.
SN 6-311,368 (4,385,055). 2-ACETYL-AND 2-PROPIONYLPYRIDINE THIOSEMICARBAZONES AS ANTIMALARIALS.
SN 6-316,574 (4,393,048). PROTECTIVE GEL COMPOSITION FOR WOUNDS.
SN 6-316,575 (4,391,799). PROTECTIVE GEL COMPOSITION FOR TREATING WHITE PHOSPHORUS BURN WOUNDS.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-515,169. AUTOMATED SYSTEM FOR DETERMINING THE MOLECULAR WEIGHT AND/OR CONCENTRATION OF MACROMOLECULES VIA SEDIMENTATION EQUILIBRIUM.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.)

Wansco Paper Products Co., Inc., New York, N.Y., Reg. No. 408,838, for the mark "HIAWATHA PRODUCTS" and design, Canc. No. 13,870.

Wansco Paper Products Co., Inc., New York, N.Y., Reg No. 408,837, for the mark "HIAWATHA BOND", Canc. No. 13,871.

Dream Merchant, Inc., Industry, Calif., Reg. No. 1,098,816, for the mark "DELTA", Canc. No. 13,880.

ERMA S. BROWN,
Deputy Clerk,
Trademark Trial and
Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

DEPARTMENT OF DEFENSE
Department of the Navy
Government-Owned Inventions
Available for Licensing

The inventions listed below are assigned to the United States Government as represented by the Secretary of the Navy and are made available for licensing by the Department of the Navy.

Copies of patents cited are available from the Commissioner of Patents and Trademarks, Washington, D.C. 20231, for $1.00 each. Requests for copies of patents must include the patent number.

Copies of patent applications cited are available from the National Technical Information Service (NTIS), 5285 Port Royal Rd., Springfield, Va. 22161. Requests for copies of patent applications must include the patent application serial number. Claims are deleted from patent application copies sold to avoid premature disclosure.

For further information contact:

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Office of Naval Research (Code 305)
800 N. Quincy St.
Arlington, Va. 22217
Telephone No. 202-696-4005

U.S. DEPARTMENT OF THE NAVY

Patent application 649,614. Float Torjectory Projectile. Filed Jan. 14, 1976.

Patent application 142,951. Wavelength Multiplexer-Demultiplexer. Filed Apr. 23, 1980.

Patent application 189,428. Multi-Component Propellant Charges. Filed Sept. 22, 1981.

Patent application 241,952. GaAs FET Oscillator. Filed Mar. 9, 1981.

Patent application 250,471. Underwater Excavator. Filed Apr. 2, 1981.

Patent application 257,683. Visual Field Perimeter and Psychomotor Tracking Performance Measuring Apparatus. Filed Apr. 27, 1981.

Patent application 258,068. Handhole Seat Resurfacing Tool for Naval Fired Boilers. Filed Apr. 27, 1981.

Patent application 261,353. Low Susceptibility Proof Mass for a Single Axis Drag Compensation System. Filed May 7, 1981.

Patent application 269,171. Quick Deployment Vehicle. Filed June 2, 1981.

Patent application 269,182. Device for Economizing Data Bandwidth. Filed June 2, 1981.

Patent application 278,785. Internal Tube Welding Apparatus. Filed June 29, 1981.

Patent application 280,767. Laser Formed Video Tube Calibration Markers. Filed July 6, 1981.

Patent application 308,310. Optical Fiber System for Measuring Magnetic Fields. Filed Oct. 5, 1981.

Patent application 317,028. Underwater Depth Telemetry. Filed Nov. 2, 1981.

Patent application 335,308. Cavity-Microstrip Multi-Mode Antenna. Filed Dec. 28, 1981.

Patent application 338,356. Method and Apparatus for Determining Lubricant Stability. Filed June 14, 1981.

Patent application 334,858. Phase Dependent Radio Navigation Apparatus with Balanced Active Voltage Probe Antenna and Impulse Noise Blanker. Filed Jan. 11, 1982.

Patent application 338,787. Utilization of Entire Transmitted Bandwidth in Continuous Transmission FM Sonar. Filed Jan. 11, 1982.

Patent application 341,410. 1,3-Diamino-5, Fluoro-2,4,6-Trinitrobenzene and Methods of Preparation. Filed Jan. 21, 1982.

Patent application 342,543. Pneumatic Launcher System. Filed Jan. 25, 1982.

Patent application 361,942. Refractory Ohmic Contacts to GaAs and the Method of Making Same. Filed Mar. 25, 1982.

Patent application 364,818. Oil Filled Towed Array Hose Without Couplings. Filed Apr. 2, 1982.

Patent application 365,816. Realtime Data Smoother and Significant Values Selector. Filed Apr. 5, 1982.

Patent application 368,793. Apparatus and Method for Determining the Phase Sensitivity of Hydrophones. Filed Apr. 15, 1982.

Patent application 374,557. Method for Measuring Particle Velocity Using Differential Photodiode Arrays. Filed May 3, 1982.

Patent application 376,468. Serial Pipeline FFT Processor. Filed May 10, 1982.

Patent application 387,633. Microbending Fiber Optic Acoustic Sensor. Filed June 6, 1982.

Patent application 388,296. Continuous Contour Linear Assembly Press Joint. Filed June 14, 1982.

Patent application 389,132. Wide-Band Distributed RF Coupler. Filed June 12, 1982.

Patent application 389,133. Wide-Band Hyrotron Traveling-Wave Amplifier. Filed June 16, 1982.

Patent application 391,786. NF_4XeF_7 and (NF_4) XeF_8. Filed June 24, 1982.

Patent application 393,949. Preparing of SiC/Al Composites from Scrap. Filed June 30, 1982.

Patent application 394,194. Fiber Optic Hull Penetrator Insert. Filed July 1, 1982.

Patent application 394,759. Fabrication of Graded SiC/Al and G/Al Composites For Use in the First Wall of a Controlled Thermonuclear Reactor. Filed July 1, 1982.

Patent application 395,388. Low-Drag Body Conformal Acoustic Array. Filed July 6, 1982.

Patent application 395,566. Tapered Seal for Flow-Through Module. Filed July 6, 1982.

Patent application 398,500. Magnetic Bridge Proximity Sensor. Filed July 15, 1982.

Patent application 402,016. Sampled Towed Array Telemetry. Filed July 26, 1982.

Patent application 403,688. A Dual Channel Gate Peak Detector. Filed July 30, 1982.

Patent application 404,684. Wideband Electrical/Optical Multiplexer. Filed Aug. 3, 1982.

Patent application 406,428. Fast Granular Superconductive Bolometer. Filed Aug. 9, 1982.

Patent application 410,229. Improved Permeable Base Transistor Structure. Filed Aug. 23, 1982.

Patent application 411,164. Ceramic-Metal Airfield Runway Markings. Filed Aug. 25, 1982.

Patent application 413,596. Zinc-Diffused Narrow Stripe AlGaAl/GaAs Double-Heterostructure Laser. Filed Aug. 31, 1982.

Patent application 414,129. Quasioptical Gyroklystron. Filed Sept. 2, 1982.

Patent application 415,639. W-Shaped Diffused Stripe GaAs/AlGaAs Laser. Filed Sept. 7, 1982.

Patent application 417,815. Simulated Oxygen Breathing Apparatus. Filed Sept. 13, 1982.

Patent application 417,826. Intensity Modulated Light Source. Filed Sept. 13, 1982.

Patent application 418,870. Optical Fiber Directional Coupler Method. Filed Sept. 16, 1982.

Patent application 419,257. Polarimetric Fabry-Perot Sensor. Filed Sept. 17, 1982.

Patent application 419,364. A Deployment Mechanism. Filed Sept. 16, 1982.

Patent application 420,209. Phase-Coded Pulse Expander-Compressor. Filed Sept. 20, 1982.

Patent application 420,990. Laser Pumped by X-Band Microwave. Filed Sept. 21, 1982.

Patent application 421,766. Pn Junction Controlled Field Emitter Array Cathode. Filed Sept. 23, 1982.

Patent application 422,122. Frequency-Spreading Coupler. Filed Sept. 23, 1982.

Patent application 423,335. Pressure Sensitive Valve Actuator. Filed Sept. 24, 1982.

Patent application 423,889. Interferometric Hydrophone Reference Leg Low Frequency Compensation. Filed Sept. 27, 1982.

Patent application 423,941. Complementary Interferometric Hydrophone. Filed Sept. 27, 1982.

Patent application 427,027. A Planar Compound Semiconductor Insulated Gate Field Transistor and a Virtual Self-Aligned Process for Making the Same. Filed Sept. 29, 1982.

Patent application 429,692. Gauge for Measuring High Transient Pressures. Filed Sept. 30, 1982.

Patent application 430,097. System for Detection of Transducer Defects. Filed Sept. 30, 1982.

Patent application 431,977. Method for Making Josephson Junctions with Contamination-Free Interfaces. Filed Sept. 30, 1982.

Patent application 431,981. An Optical RB Downconverter. Filed Sept. 30, 1982.

Patent application 432,215. Temperature-Insensitive Optical Fibers. Filed Oct. 1, 1982.

Patent application 433,580. Thermal Sight Training Device. Filed Oct. 12, 1982.

Patent application 433,765. Method of Producing a Piezoelectric Material. Filed Oct. 12, 1982.

Patent application 435,155. Gyrotron Traveling-Wave Device Including Quarter Wavelength Anti-Reflective Dielectric Layer to Enhance Microwave Absorption. Filed Oct. 19, 1982.

Patent application 435,156. Superlatice Ultrasonic Wave Generator. Filed Oct. 19, 1982.

Patent application 437,083. Shock-Hardened Hydrophone. Filed Oct. 27, 1982.

Patent application 437,092. System for Rapid Repair of Damaged Airfield Runways. Filed Oct. 27, 1982.

Patent application 437,098. Fiber Optic Sensors Operating at DC. Filed Oct. 27, 1982.

Patent application 437,708. Inflatable Boat with Demountable Transom. Filed Oct. 29, 1982.

Patent application 437,915. Improved Tunnell Diode and Method of Making. Filed Oct. 29, 1982.

Patent application 438,211. Magneto-mechanical Energy Conversion. Filed Nov. 1, 1982.

Patent application 438,239. Deep Submergence Vehicle (DSV) Lightweight Cable Cutter. Filed Nov. 1, 1982.

Patent application 440,685. Controlled- Line-width Laser Source. Filed Nov. 16, 1982.

Patent application 440,687. Novel Alloys and Method of Making. Filed Nov. 10, 1982.

Patent application 442,410. Raster Shifting Delay Compensation System. Filed Nov. 17, 1982.

Patent application 443,828. Technique Fabricating Mnos Structures Utilizing Hydrogen Ion Implanation. Filed Nov. 22, 1982.

Patent application 444,139. Balanced System for Ranging and Synchronization Between Satellite Pairs. Filed Nov. 24, 1982.

Patent application 444,639. CCD Head and Eye Position Indicator. Filed Nov. 26, 1982.

Patent application 445,777. Semi-Active Notch Filter. Filed Nov. 30, 1982.

Patent application 445,877. Single Zone Lighting Controller. Filed Dec. 1, 1982.

Patent application 445,875. Underwater Sound Generator. Filed Dec. 1, 1982.

Patent application 446,107. Pivoting Pipe Layer. Filed Dec. 2, 1982.

Patent application 446,926. A Cable Deployment System. Filed Dec. 6, 1982.

Patent application 450,693. Method for Eliminating Birefringence in a Fiber Optical Coupler and a Coupler Polarization Corrector. Filed Dec. 17, 1982.

Patent application 451,893. Method for Bonding Insulator to Insulator. Filed Dec. 21, 1982.

Patent application 453,025. A Fast Intense Pumping System for Generation of Vacuum Ultraviolet Laser Emission from Solid State Crystals. Filed Dec. 27, 1982.

Patent application 453,631. Lightweight, Broadband Rayleight Wave Transducer. Filed Dec. 27, 1982.

Patent application 453,674. Dinitropropyl Fluorodinitroethyl Formal Plasticizer and Method of Preparation. Filed Dec. 27, 1982.

Patent application 453,675. 3,3,3-Trinitropropanol and Method of Preparation. Filed Dec. 27, 1982.

Patent application 454,308. High Frequency Ohmic Contact. Filed Dec. 29, 1982.

Patent application 456,916. Bocollimated Dual Reflector Antenna. Filed Jan. 10, 1983.

Patent application 462,493. Reversible Optical Waveguide Vapor Sensor. Filed Jan. 31, 1983.

Patent application 462,860. Fiber Optic Interferometer Using Two Wavelengths or Variable Wavelength. Filed Feb. 1, 1983.

Patent application 463,103. Test Device for Expendable Bathythermograph Set (XBT). Filed Feb. 2, 1983.

Patent application 467,421. Dual Scan Rate Radar. Filed Feb. 17, 1983.

Patent application 467,430. Combined Microwave Parallel Amplifier-RF Attenuator/Modulator. Filed Feb. 17, 1983.

Patent application 467,714. 1:1:3 and 1:3 "Mixed" Polymitroethyl Orthocarbons Via "Mixed" Trialkoxymethyl Trichlormethyl Disulfides. Filed Feb. 18, 1983.

Patent application 467,715. Derivatives of Energetic Orthofomates. Filed Feb. 18, 1983.

Patent application 467,727. Radiation Source Shield and Calibration. Filed Feb. 18, 1983.

Patent application 470,843. Compact Phased Array Fed Dual Reflector Antenna System. Filed Feb. 28, 1983.

Patent application 471,942. Battlefield Friend or Foe Identification Trainer. Filed Mar. 3, 1983.

Patent application 472,330. A Fixed Aperture, Rotating Feed, Beam Scanning Antenna System. Filed Mar. 4, 1983.

Patent application 473,411. Free Electron Laser Injection Oscillator. Filed Mar. 9, 1983.

Patent application 474,607. Magnetically Induced Laser. Filed Mar. 11, 1983.

Patent application 477,208. Smoke Generator for Use with Water and Smoke Generant. Filed Mar. 21, 1983.

Patent 3,434,551. Buoyant Coring Apparatus. Filed June 26, 1967. Patented Mar. 25, 1969.

Patent 3,621,447. Electrical Connection For Deep Submergence Lights. Filed Dec. 22, 1969. Patented Nov. 16, 1971.

Patent 3,998,223. Syringe Apparatus. Filed Oct. 24, 1975. Patented Dec. 21, 1976.

Patent 4,092,858. Oceanographic Sensor with in-Situ Cleaning and Bio-Fouling Prevention System. Filed Mar. 11, 1977. Patented June 6, 1978.

Patent 4,233,678. Serial Phase Shift Beam-former Using Charge Transfer Devices. Filed Mar. 12, 1979. Patented Nov. 11, 1980.

Patent 4,229,832. Diver's Suit Excess Gas Exhaust Valve. Filed May 21, 1979. Patented Oct. 28, 1980.

Patent 4,326,374. High Velocity Exhaust Diffuser and Water Baffle. Filed Mar. 18, 1980. Patented Apr. 27, 1980.

Patent 4,241,427. Condition Responsive Cable with Bendable Coaxial Sensor Mount. Filed Oct. 27, 1978. Patented Dec. 23, 1980.

Patent 4,241,898. Purge Valve for Diver's Mask. Filed Jan. 8, 1979. Patented Dec. 30, 1980.

Patent 4,244,455. Rotary Shaft Decoupling Mechanism. Filed Oct. 17, 1978. Patented Jan. 13, 1981.

Patent 4,244,456. Ejected Roller Shaft Disconnect Mechanism. Filed Sept. 21, 1978. Patented Jan. 13, 1981.

Patent 4,246,671. Buoy Anchoring System. Filed Nov. 21, 1979. Patented Jan. 27, 1981.

Patent 4,248,854. Production of Antibody Toward Asbestos and Immunoassay Therewith. Filed Aug. 27, 1979. Patented Feb. 3, 1981.

Patent 4,251,794. Flexible Linear Thermal Array. Filed Dec. 10, 1979. Patented Feb. 17, 1981.

Patent 4,293,339. Underwater Wax Formulation. Filed Feb. 28, 1980. Patented Oct. 6, 1981.

Patent 4,295,212. Linear Acoustic Array. Filed Jan. 28, 1980. Patented Oct. 13, 1981.

Patent 4,317,000. Contrahelically Laid Torque Balanced Benthic Cable. Filed July 23, 1980. Patented Feb. 23, 1982.

Patent 4,330,812. Circuit Board Electronic Component Cooling Structure with Composite Spacer. Filed Aug. 4, 1980. Patented May 18, 1982.

Patent 4,346,348. Laser Technique for Accurately Determining the Compensation Density in N-Type Narrow Gas Semi-conductor. Filed Feb. 28, 1980. Patented Aug. 24, 1982.

Patent 4,345,207. Method and Apparatus for Obtaining Enhanced NMR Signals. Filed Apr. 24, 1980. Patented Aug. 17, 1982.

Patent 4,346,953. Antenna Coupling Assembly. Filed Apr. 10, 1980. Patented Aug. 31, 1982.

Patent 4,347,474. Solid State Regulated Power Transformer with Waveform Conditioning Capability. Filed Sept. 18, 1980. Patented Aug. 31, 1982.

Patent 4,347,485. Excimer-Pumped Blue-Green Laser. Filed May 23, 1979. Patented Aug. 31, 1982.

Patent 4,347,517. Microstrip Backfire Antenna. Filed Jan. 26, 1981. Patented Aug. 31, 1982.

Patent 4,347,580. Array Convolver/Correlator. Filed July 21, 1980. Patented Aug. 31, 1982.

Patent 4,347,593. Piezoceramic Tubular Element With Zero End Displacement. Filed Dec. 7, 1979. Patented Aug. 31, 1982.

Patent 4,347,891. Thermochemical Energy Transport Process. Filed May 6, 1980. Patented Sept. 7, 1982.

Patent 4,348,074. Application of Ion Implantation to Linbo Integrated, Optical Spectrum Analyzers. Filed Mar. 3, 1980. Patented Sept. 7, 1982.

Patent 4,348,347. Stretch-Staging of Resin-Based Fiber-Impregnated Tape. Filed Apr. 27, 1981. Patented Sept. 7, 1982.

Patent 4,349,292. In-Flight Hydrophone Deployment System for Underwater Vehicles. Filed Mar. 5, 1981. Patented Sept. 14, 1982.

Patent 4,350,728. Cross Reinforcement in a Graphite-Epoxy Laminate. Filed Oct. 1980. Patented Sept. 21, 1982.

Patent 4,350,890. Apparatus for Monitoring Low Level Light Emission in Underwater Environment. Filed Dec. 12, 1980. Patented Sept. 21, 1982.

Patent 4,350,993. Heterojunction and Schottky Barrier FBS Targets. Filed June 16, 1980. Patented Sept. 21, 1982.

Patent 4,351,776. Preparation of Iodophthalonitrile. Filed Oct. 8, 1980. Patented Sept. 28, 1982.

Patent 4,352,095. A/D Dynamic Range Enhancing Technique. Filed June 25, 1981. Patented Sept. 28, 1982.

Patent 4,352,563. Method of Providing Phase Biasing in a Continuous Single-Mode Fiber Ring Interferometer. Filed Sept. 22, 1980. Patented Oct. 5, 1982.

Patent 4,354,873. Underwater Antifoulant Composition. Filed May 18, 1981. Patented Oct. 19, 1982.

Patent 4,355,791. Snubber Assembly. Filed Dec. 1, 1980. Patented Oct. 26, 1982.

Patent 4,355,867. Spherical Segment Insertion Apparatus. Filed Jan. 2, 1981. Patented Oct. 26, 1982.

Patent 4,356,492. Multi-Band Single-Feed Microstrip Antenna System. Filed Jan. 26, 1981. Patented Oct. 26, 1982.

Patent 4,356,788. Deepwater Propellant Embedded Anchor Having Emergency Release Mechanism. Filed Apr. 27, 1981. Patented Nov. 2, 1982.

Patent 4,357,180. Annealing of Ion-Implanted GaAs and InP Semiconductors. Filed Jan. 26, 1981. Patented Nov. 2, 1982.

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Patent 4,360,924. Laser Bottlenecking Technique. Filed Oct. 23, 1980. Patented Nov. 23, 1982.

Patent 4,361,879. Ferrofluid Transducer. Filed Aug. 25, 1980. Patented Nov. 30, 1982.

Patent 4,362,203. Corner Fed Electric Non Rectangular Microstrip Dipole Antennas. Filed Sept. 26, 1979. Patented Apr. 20, 1982.

Patent 4,362,932. Wide Band Data Processing Technique. Filed Jan. 22, 1981. Patented Dec. 7, 1982.

Patent 4,362,968. Slow-Wave Wideband Cyclotron Amplifier. Filed June 24, 1980. Patented Dec. 7, 1982.

Patent 4,363,114. Low Noise Remote Optical Fiber Sound Detector. Filed Jan. 21, 1981. Patented Dec. 7, 1982.

Patent 4,363,115. Low Frequency, Log-Periodic Acoustic Array. Filed Jan. 26, 1981. Patented Dec. 7, 1982.

Patent 4,364,048. Interleaved Sweep Radar Display for Improved Target Detection. Filed Aug. 13, 1980. Patented Dec. 14, 1982.

Patent 4,367,845. Automatic Temperature Control System for Diver Heating System. Filed July 29, 1981. Patented Jan. 11, 1983.

Patent 4,368,479. Silicon Barrier Josephson Junction Configuration. Filed Oct. 29, 1980. Patented Jan. 11, 1983.

Patent 4,368,987. Conjugate-Phase, Remote-Clock Synchronizer. Filed June 25, 1980. Patented Jan. 18, 1983.

Patent 4,370,657. Electrically End Coupled Parasitic Mictostrip Antennas. Filed Mar. 9, 1981. Patented Jan. 25, 1983.

Patent 4,371,771. Cutting Torch and Method. Filed Nov. 10, 1980. Patented Feb. 1, 1983.

Patent 4,371,809. Integral-Shadow-Grid Controlled-Porosity Dispenser Cathode. Filed June 19, 1980. Patented Feb. 1, 1983.

Patent 4,371,838. Optical Fiber Waveguide For Measuring Magnetic Fields. Filed Sept. 24, 1980. Patented Feb. 1, 1983.

Patent 4,371,874. Chaff Dipole Elements and Method of Packaging. Filed Oct. 5, 1973. Patented Feb. 1, 1983.

Patent 4,372,642. Multiple Thin Film Absorption of Reflected Substrate Modes in Waveguide System. Filed Nov. 25, 1980. Patented Feb. 8, 1983.

Patent 4,373,190. Efficient, Pre-compression, Bandwidth-Tolerant, Digital Pulse Expander-Compressor. Filed Jan. 22, 1981. Patented Feb. 8, 1983.

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Patent 4,375,372. Use of Cubic Rare-Earth-Iron Laves Phase Intermetallic Compounds as Magnetostrictive Transducer Materials. Filed Mar. 16, 1972. Patented Mar. 1, 1983.

Patent 4,376,302. Piezoelectric Polymer Hydrophone. Filed Apr. 13, 1978. Patented Mar. 8, 1983.

Patent 4,376,917. Solid-State Cyclotron Maser. Filed June 25, 1980. Patented Mar. 15, 1983.

Patent 4,377,509. Packaging For Ocean Disposal of Low-Level Radioactive Waste Material. Filed July 14, 1980. Patented Mar. 22, 1983.

Patent 4,377,744. Remote Lens Focusing System For an Aerial Camera. Filed July 14, 1980. Patented Mar. 22, 1983.

Patent 4,380,022. Monolithic Fully Integrated Class B Push-Pull Microwave GaAs Messet With Differential Inputs And Outputs With Reduced Miller Effect. Filed Dec. 9, 1980. Patented Apr. 12, 1983.

Status of PTO Services

The following is an update of the status of PTO services as of November 3, 1983:

Service Item	FY 1984 Performance Goal (Calendar Days)	Actual
Filing Receipts:		
Patents	22	23
Trademarks	30	29
Patent Copies:		
Window Coupons	5	98% within 5 days
Mail Coupons	29	100% within 22 days
Letter Orders	34	100% within 24 days
Certified Copies:		
Trademark Registrations	30	8
Applications-As-Filed	20	98% within 10 days
File-Wrapper/Contents	N/A	100% within 20 days
Walk-up Certification	1	100% within 1 day
Trademark Search Library:		
Filing Drawings	21	19
Filing Reg. Certificates	3	On schedule
Assignments:		
Patents	25	22
Trademarks	25	15
Avg. Days from Issue Fee Payment to Issue Date	90-100	92
Patent Official Gazette:		
In Bookstore	Issue Date	On schedule
Mailed	Issue Date	Avg. 1 day late
Patent Grants Mailed	Issue Date	Avg. 1 day late
Patent Copies Available	Issue Date	Avg. 5 days late
Trademark Official Gazette:		
In Bookstore	Issue Date	On schedule
Mailed	Issue Date	On schedule
Trademark Regs. Mailed	Issue Date	On schedule

IMPROVEMENTS TO SERVICES

- *Patent and Trademark Copy Orders.* We understand there is a problem with unfilled patent and/or trademark copy orders. We are requesting our contractor to provide us with the date of the oldest order not filled. We plan to provide this statistic in future service statistics. If you currently have any old outstanding unfilled orders, send the appropriate information to:

  Public Service Center
  U.S. Patent and Trademark Office
  CP3–2C24
  Washington, D.C. 20231
  (703) 557-5168

  These orders will be completed as soon as possible.

- *Customer Service Inquires.* Effective October 1, 1983, the Office of Patent and Trademark Services was reorganized. All inquiries previously handled by the Customer Services Division on (202) 377-3937 will be handled as follows:

  1. Certified Copies and Other Related Documents— (202) 377-4359
  2. Subscriptions Services — (202) 377-5435
  3. Copy Fulfillment/MACRO Systems, Inc. — (202) 377-2535

- *Microfilming Active Trademark and Patent File Histories.* The request for Proposals (RFP) was issued by the Department of Commerce on September 14, 1983. Contract award is anticipated to be mid-December, with filming of current issues to begin in early January.

- *Telephone and Location Directory* — Over the past several months, many PTO organizational units have been relocated to utilize newly acquired space in the most effective manner. Following is a directory with current telephone and location information. The directory is by organizational unit. As changes occur to this directory, they will be published.

Nov. 3, 1983.

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313 Fire Extinguishing, Fluid Spraying, Handling Implements John J. Love rm 6C17 CP4..... 557-3305
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333 Denistry, Animal Husbandry, Harvesting and Sign Exibiting Louis G. Mancene rm 4D01 CP4..... 557-3131
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335 Surgery Diagnostic Kyle L. Howell rm 4E02 CP4..... 557-3144
336 Surgery Instruments, Medicators and Receptors C. Fred Rosenbaum rm 4B22 CP4.. 557-3144
337 Printing, Typewriting and Excavating Edgar S. Burr rm 4E16 CP4..... 557-3501

340 Heat Power and Fluid Engineering rm 3C17 CP4..... 557-3340
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341 Power Plants, Fluid Motors Robert E. Garrett rm 3C17 CP4..... 557-0900
342 Internal Combustion Engines Charles J. Myhre rm 3C17 CP4..... 557-0900
343 Combustion Power, Plant Reaction, Motors, Pumps, Rotary Expansible Chamber Devices and Plural Expansible Chamber Type Motors Carlton R. Croyle rm 3C17 CP4..... 557-3464
344 Heat Generation, Drying, Vaporizing, Ventilation, Refrigeration Albert J. Makay rm 3C17 CP4..... 557-0900
345 Stoves and Combustion Samuel Scott rm 3C17 CP4..... 557-3468
346 Heat Exchangers, Rotary Engines and Power Plant William R. Cline rm 3C17 CP4..... 557-5721
347 Fluid Handing and Valves Martin P. Schwadron rm 3C17 CP4..... 557-3401

350 General Constructions, Petroleum and Mining Engineering, Gearing, Joints and Fasteners, Textiles rm 4C17 CP3..... 557-3000
Director Al Lawrence Smith rm 4C17 CP3..... 557-3000
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351 Joints and Connections, Pipe Couplings, Fences, Earth & Hydraulic Engineering Cornelius J. Husar rm 4C17 CP3..... 557-1300
352 Gearing, Machine Elements, Power Transmissions Leslie A. Braun rm 4C17 CP3... 557-1300
353 Textile and Leather Manufacture, Apparel, Textiles Werner H. Schroeder rm 4C17 CP3..... 557-3411
354 Building Structures and Components Price C. Faw, Jr. rm 4C17 CP3..... 557-0570
355 Supports, Racks, Fire Escapes, Scaffolds, Flexible Partitions Ramon S. Britts rm 4C17 CP3..... 557-0540
356 Petroleum, Mining and Highway Engineering James A. Leppink rm 4C17 CP3..... 557-0540
357 Tables, Chairs, Cabinets, Windows, Doors, Buckles, Buttons, Clasps William E. Lyddane rm 4C17 CP3..... 557-0540
358 Fasteners, Locks, Closure Fasteners, Beds Gary L. Smith rm 4C17 CP3..... 557-1300

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Publication & Issue Supervisor Donald Perritt rm 4C23 CP2..... 557-5247
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Correspondence Branch Mary Allen rm 1A03 CP2..... 557-3226
Facilities Management Division William Frye Lobby CP6..... 557-0410
Records and Property Management Branch (Vacant) Lobby CP6..... 557-0410
Space and Telecommunications Branch Ed Bogdan rm 509 CP1..... 557-0183
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ADP Patent Division Raymond R. Rahn (Acting) rm 6D23 CP2..... 557-3557

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Director Donald P. Stein rm 6D07 CP2..... 557-3957

CM1	Crystal Mall 1, 1911 Jefferson Davis Highway
CM2	Crystal Mall 2, 1921 Jefferson Davis Highway
CP1	Crystal Plaza 1, 2001 Jefferson Davis Highway
CP2	Crystal Plaza 2, 2011 Jefferson Davis Highway
CP3	Crystal Plaza 3, 2021 Jefferson Davis Highway
CP4	Crystal Plaza 4, 2121 Jefferson Davis Highway
CP6	Crystal Plaza 6, 2221 Jefferson Davis Highway
CP34	Crystal Plaza 34, 2021 Jefferson Davis Highway
CS4	Crystal Square 4, 1745 Jefferson Davis Highway
CS5	Crystal Square 5, 1755 Jefferson Davis Highway
CG2	Crystal Gateway 2, 1225 Jefferson Davis Highway
EADS	1232 South Eads Street
FERN	1411 South Fern Street
WNY	Washington Navy Yard, 2 & M. Street, S.E., Bldg. 159

PATENT NOTICES

Certificates of Correction for the Week of Nov. 29, 1983

3,906,463	4,377,574	4,390,611	4,400,518
4,170,958	4,377,787	4,390,688	4,401,174
4,251,261	4,379,342	4,391,263	4,401,697
4,296,125	4,379,691	4,391,977	4,402,033
4,301,487	4,380,053	4,392,013	4,402,064
4,308,849	4,380,064	4,392,093	4,402,072
4,313,670	4,380,514	4,392,621	4,402,128
4,319,241	4,380,555	4,392,686	4,402,311
4,321,362	4,381,254	4,393,472	4,402,540
4,326,599	4,383,926	4,393,653	4,403,035
4,334,192	4,384,682	4,394,333	4,403,671
4,336,572	4,384,918	4,394,777	4,403,757
4,342,440	4,385,177	4,395,327	4,404,508
4,355,592	4,385,536	4,395,389	4,404,552
4,358,421	4,386,618	4,395,474	4,404,879
4,360,460	4,386,663	4,396,530	4,405,412
4,362,870	4,386,929	4,396,927	4,405,701
4,363,094	4,387,149	4,397,181	4,405,705
4,364,088	4,387,200	4,397,857	4,405,726
4,368,689	4,387,505	4,398,134	4,405,917
4,371,846	4,387,615	4,398,460	4,406,037
4,372,461	4,388,049	4,398,577	4,406,877
4,374,350	4,388,994	4,398,946	4,407,741
4,375,734	4,389,773	4,399,071	4,408,100
4,375,834	4,389,788	4,399,259	
4,376,984	4,390,206	4,400,024	
4,377,222	4,390,215	4,400,147	

Disclaimer

3,671,726.—*James Richard Kerr,* Tigard, Ore. ELECTRO-OPTICAL APPARATUS FOR PRECISE ON-LINE MEASUREMENT OF THE THICKNESS OF MOVING STRIP MATERIAL. Patent dated June 20, 1972. Disclaimer filed June 17, 1981, by the assignee, *The Coe Manufacturing Co.*

Hereby enters this disclaimer to claims 14–16 of said patent.

Disclaimers and Dedications

3,320,999.—*Charles J. Stalego,* Newark, Ohio. INTERNAL COMBUSTION BURNER. Patent dated May 23, 1967. Disclaimer and Dedication filed, Oct. 11, 1983, by the assignee, *Owens-Corning Fiberglas Corp.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

3,520,186.—*George Leslie Adams,* Bay Shore and *Irwin S. Landow,* East Meadow, N.Y. ULTRASONIC FLUID INTERFACE SENSING. Patent dated July 14, 1970. Disclaimer and Dedication filed Nov. 19, 1981, by the assignee, *National Sonics Corp.*

Hereby disclaims and dedicates to the Public claims 1 and 3 through 12 of said patent.

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CONDITION OF PATENT APPLICATIONS AS OF April 2, 1983

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—D. E. TALBERT, Director ..... Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metallurgical Apparatus; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	1-16-81
GENERAL ORGANIC CHEMISTRY, GROUP 120—C. E. VAN HORN, Director ..... Heterocyclic Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	11-20-81
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—J. O. THOMAS, JR., Director .... Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g., Coating; Molding; Ink; Prosthdontics; Adhesive and Abrading Compositions; Molding, Shaping, Treating Process, and Apparatus Therefor; Irradiation (Part); Bleaching; Dyeing; Leather, Fur and Textile Treating Compositions.	3-1-82
COATING, LAMINATING AND PHOTOGRAPHY, GROUP 160—S. N. ZAHARNA, Director ..... Coating: Processes, Apparatus and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; and Photography.	3-09-82
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. F. WHITE, Director ..... Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	1-12-82
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—S. W. ENGLE, Director Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Horology; Acoustics; Recorders; Weighing Scales.	5-22-81
SPECIAL LAWS ADMINISTRATION, GROUP 220—KENNETH L. CAGE, Director ..... Ordnance, Firearms and Ammunition; Lubrication; Illumination; Nuclear Reactors; Acoustics, Communications, Optics; Radar; Directional Radio; Torpedoes; Seismic Exploring; Cathode Ray Tube Circuitry; Cryptography; Laser Devices; Radioactive Materials; Powder Metallurgy, Rocket Fuels; Special, Fuel, Explosive and Thermic Compositions; Thermal and Photoelectric Batteries.	3-30-81
INFORMATION TRANSMISSION, STORAGE, AND RETRIEVAL, GROUP 230—EARL LEVY, Director ..... Communications; Multiplexing Techniques; Television; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	1-05-81
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director ..... Receptacles; Bearings; Joint Packing; Conduits; Switches; Presses; Plumbing Fixtures; Textile Spinning; Cleaning; Food Treating; Agitating; Centrifugal Separating; Geometrical Instruments; Sound Recording; Image Projectors; Web Feeding; Winding and Reeling; Cable Hoists; Measuring and Testing; Indicating; Fluent Material Handling; Shaft; Impellers; Rotary Fluid Motors.	5-12-81
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director ..... Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	8-25-80
DESIGN, GROUP 290—KENNETH L. CAGE, Director ..... Industrial Arts; Household, Personal and Fine Arts.	1-30-81
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director ..... Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	5-18-81
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—STEPHEN G. KUNIN, Director Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion-Bonding, Metal Founding; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks; Fishing, Etc.; Butchering; and Books and Printed Matter.	7-27-81
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. AEGERTER, Director ..... Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Plants; Harvesting; Earth Working and Excavating; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Information Dissemination.	8-27-82
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—D. J. STOCKING, Director ..... Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Couplings; Gearing; Fluid Handling and Control; Lubrication.	11-17-80
GENERAL CONSTRUCTIONS, TEXTILES, MINING AND GEARING, GROUP 350—A. L. SMITH, Director ..... Building Structures; Racks; Cabinets; Closures; Supports; Furniture; Fasteners; Locks; Pipe Couplings; Joints; Miscellaneous Hardware; Textiles; Sewing Machines; Apparel; Footwear; Earth Engineering; Earth Drilling; Mining; Wells; Roads; Bridges; Tool Driving; Gearing; Machine Elements; Clutches.	9-17-80

Expiration of patents: The patents within the range of numbers indicated below expire during April 1983, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... **Numbers 3,243,822 to 3,248,737, inclusive**

Plant Patents ..... **Numbers 2,616 to 2,627 inclusive**

REISSUES

NOVEMBER 29, 1983

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

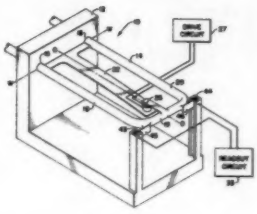
Re. 31,450
METHOD AND STRUCTURE FOR FLOW MEASUREMENT

James E. Smith, Boulder, Colo., assignor to Micro Motion, Inc., Boulder, Colo.

Original No. 4,187,721, dated Feb. 12, 1980, Ser. No. 926,468, Jul. 20, 1978. Continuation-in-part of Ser. No. 818,475, Jul. 25, 1977, abandoned. Application for reissue Feb. 11, 1982, Ser. No. 348,071

Int. Cl.³ G01F *1/86*

U.S. Cl. 73—861.38 55 Claims



51. A method for measuring *mass* flow *rate* of a material comprising:

flowing the material through a "U" shaped conduit;

oscillating the conduit [around] *about* an axis of oscillation passing through the legs of the conduit at substantially [equal] *right* angles; and

measuring the [forces tending to deflect the "U" shaped conduit around a deflection axis perpendicular to the oscillation axis and symmetrical to the conduit] *material mass flow rate* by determining the time lag between the passage of one side of the conduit through a plane substantially at the midpoint of oscillation and the passage of the other side of the conduit through such plane.

Re. 31,451
MANUAL TRANSMISSION SHIFTER FOR OPERATING A TRANSMISSION WITH ELONGATED ACTUATORS SUCH AS FLEXIBLE CABLES

Charles Osborn, Spring Lake, Mich., assignor to JSJ Corporation, Grand Haven, Mich.

Original No. 4,245,521, dated Jan. 20, 1981, Ser. No. 905,123, May 12, 1978. Application for reissue Sep. 28, 1982, Ser. No. 425,329

Int. Cl.³ G05G *9/16*; F16H *57/06*

U.S. Cl. 74—476 66 Claims

1. In a shifter for operating a manual transmission with a pair of flexible cables comprising:

a gear selecting shift lever;

a pivotable shift lever carrier;

first and second generally orthogonal axes;

a stationary base for mounting the transmission shifter to an automotive vehicle;

said shift lever being pivotable relative to said [carrier] *base* about said first axis;

said carrier being pivotable relative to said base about said second axis;

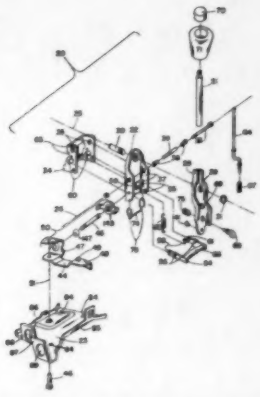
means for translating rotation of said shift lever about said first axis to a cable displacement of one of said cables; and

means for translating rotation of said shift lever and said carrier about said second axis to a cable displacement of said other of said cables the improvement comprising:

said means for translating rotation of said shift lever and said carrier about said second axis to the cable displacement of said other cable comprises a member pivotably mounted on said base about an axis offset from said first and second axes;

joint connection means for operatively connecting said carrier to said member, *said joint connection means providing for articulated motion between said carrier and said member with minimal lost motion*; and

means for securing the said other of said flexible cables to said member.



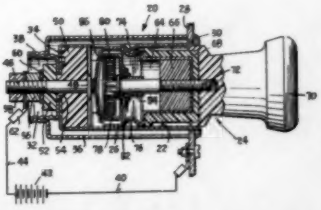
Re. 31,452
QUICK-ACTING ELECTRIC CIGAR LIGHTER

Lawrence E. Fenn, Bridgeport, and Charles R. Sperry, Westport, both of Conn., assignors to Casco Products Division of Sun Chemical Corporation, Bridgeport, Conn.

Original No. 4,236,061, dated Nov. 25, 1980, Ser. No. 12,882, Feb. 16, 1979. Continuation of Ser. No. 252,400, Apr. 9, 1981, abandoned. Application for reissue Jul. 19, 1982, Ser. No. 399,764

Int. Cl.³ F23Q *7/02*

U.S. Cl. 219—265 13 Claims



1. An instant electric cigar lighter of the type having a heating coil energized from a source of current, comprising in combination:

(a) a holder device presenting a socket,

(b) an igniting unit plug receivable in and removable from the socket of the holder device,

(c) said igniting unit plug having an electrical resistance

heating coil adapted to be electrically energized and presenting an exposed face for igniting cigarettes, cigars and the like,

(d) a snap-type bimetallic member of dished configuration, said member having flexing portions and being adapted to be disposed in close heating-receiving relation to the heating coil of the igniting unit plug, said member being disposd in the socket of the holder device and having a laterally offset mounting portion which is surrounded by the flexing portions of the member,

(e) a mounting stud carried by the holder device, having a head portion which is welded against the laterally offset portion of the bimetallic member at locations which are spaced from the bends of the laterally offset portion whereby flexing and snapping of the bimetallic member is characterized by reduced strains and stresses at the weld areas, by virtue of the existence of said bends at the laterally offset portion of the member.

PLANT PATENTS

GRANTED NOVEMBER 29, 1983

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,145
ROSE PLANT
F. Harmon Saville, Rowley, Mass., assignor to Nor'East Miniature Roses, Inc., Rowley, Mass.
Filed Aug. 25, 1982, Ser. No. 411,358
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—7 1 Claim

1. A new and distinct variety of rose plant of the miniature rose class, substantially as shown and described, characterized particularly by bright lemon yellow flowers edged with Dutch vermilion red borne singly and in large clusters on a vigorous, upright growing plant.

5,146
ALMOND TREE (GARDEN PRINCESS)
Chris F. Zaiger, 537 Rosemore Ave., Modesto, Calif. 95351
Filed Feb. 8, 1982, Ser. No. 346,607
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—30 1 Claim

1. A new and distinct variety of almond tree, as illustrated and described, characterized by the tree being small size, upright in growth, and a heavy regular bearer of medium size, sweet kernel nuts harvesting at the same time as Mission; the tree is further characterized by its heavy set of dark pink bloom, blooming 4 to 5 days after Merced, and being self-fertile.

5,147
PEACH TREE "PEPPERMINT"
Sam S. Skrhak, Rte. 2, Box 116P, McGregor, Tex. 76657
Filed Jun. 28, 1982, Ser. No. 392,957
Int. Cl.[3] A01H *5/03*
U.S. Cl. Plt.—43 1 Claim

1. A new and distinct variety of peach tree substantially as herein described and illustrated, characterized particularly by its bearing of large uniquely colored double flowers.

5,148
RED MAPLE TREE NAMED VASE
Cornelius A. Millane, 604 Main St., Cromwell, Conn. 06416
Filed Aug. 26, 1982, Ser. No. 412,022
Int. Cl.[3] A01H *5/12*
U.S. Cl. Plt.—51 1 Claim

1. A new and distinct variety of red maple tree as herein shown and described.

5,149
RHODODENDRON PLANT 'GOLDILOCKS'
Howard Kerrigan, 24249 Second St., Hayward, Calif. 94541
Filed Mar. 22, 1982, Ser. No. 360,618
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—55 1 Claim

1. A new and distinct variety of rhododendron plant substantially as herein shown and described primarily characterized by: Compact growth with deep yellow blooms borne in profusion.

5,150
POINSETTIA PLANT NAMED R-13
Paul Ecke, Jr., Encinitas, Calif. 92024
Filed Jan. 15, 1982, Ser. No. 339,783
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—86 1 Claim

1. A new and distinctive red poinsettia cultivar, substantially as herein shown and described, characterized by its bright dark red bract color and its early, eight to ten week, blooming characteristic at a low growing temperature, generally in the range of 15° to 17° C.

PATENTS

GRANTED NOV. 29, 1983

ERRATA

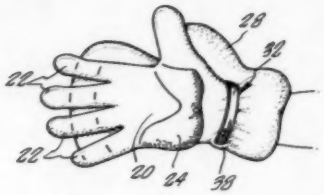
For CLASS	See PATENT NO.
037–002	4,417,416
084–001	4,417,494
604–081	4,417,577
502–209	4,418,003
502–182	4,418,004
502–217	4,418,005
502–073	4,418,006
502–312	4,418,007
502–340	4,418,008
381–024	4,418,243
377–033	4,418,275
318–341	4,418,298

PATENTS

GRANTED NOVEMBER 29, 1983

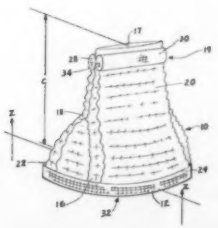
GENERAL AND MECHANICAL

4,417,359
KARATE GLOVE
Johnnie L. Johnson, 1455 W. 94th St., Los Angeles, Calif. 90047
Continuation-in-part of Ser. No. 792,135, Apr. 29, 1977, abandoned. This application Jun. 6, 1979, Ser. No. 46,183
Int. Cl.³ A41D *19/00*
U.S. Cl. 2—161 A **4 Claims**



1. A protective glove for use in the martial arts comprising an inner glove adapted to fit over the wearer's hand, said inner glove defining a palm portion, individual finger receiving portions and a thumb receiving portion, said finger receiving portions and said thumb receiving portion being closed at their extended ends; a flexible padded backing secured to and disposed over the backside of said inner glove and extending over said finger receiving portions; and means for securing said backing to said finger receiving portions at locations spaced from the closed extended ends thereof such that said finger receiving portions are restrained from relative lateral movement while the extended ends of said finger receiving areas are freely moveable from said backing to cooperate with said thumb receiving portion for gripping an opponent.

4,417,360
NONTRAUMATIC PROSTHETIC VALVE WITH MAGNETIC CLOSURE
Manoutchehr Moasser, 16005 Crain Hwy., Brandywine, Md. 20613
Filed Jul. 31, 1981, Ser. No. 288,941
The portion of the term of this patent subsequent to Jan. 20, 1998, has been disclaimed.
Int. Cl.³ A61F *1/22*
U.S. Cl. 3—1.5 **10 Claims**



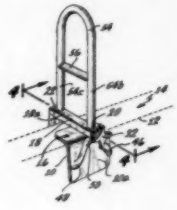
1. A prosthetic valve for causing unidirectional flow of a pulsatory fluid, comprising

(a) mounting means positionable upstream within the flow of pulsatory fluid for forming an inlet through which the pulsatory fluid may flow into the valve,

(b) valve outlet means for moving from a first configuration in which fluid flow through said inlet is cut off to a second configuration in which fluid may freely flow through said inlet from the upstream side to the downstream side of the valve in response to the fluid pressure upstream of the valve increasing above the fluid pressure downstream of the valve, said valve outlet means including a valve element moving from a first position in which said inlet is closed off when said valve outlet means is in said first configuration and a second position in which said inlet is open for passage of fluid therethrough when said valve outlet means is in said second configuration, said valve outlet means further including a stop for engaging said valve element in one of said positions, wherein said stop includes opposed wall segments and said wall segments are extended laterally and are joined to form a tubular element, said joined wall segments being formed of non-resilient, biologically non-reactive fabric; and

(c) valve impact preventing means for preventing traumatic impact of said valve element with said stop, said valve impact preventing means including magnetic means for forming a magnetic repulsive force which tends to repel said valve element from said stop with a force which increases as said valve element comes closer to said stop.

4,417,361
GRAB BAR
Alfred A. Smith, Van Nuys, Calif., assignor to Guardian Products Company, Inc., North Hollywood, Calif.
Filed May 17, 1982, Ser. No. 379,253
Int. Cl.³ A47K *3/022*
U.S. Cl. 4—577 **4 Claims**



1. Gripping means mountable by means of a single torquing screw to provide hand support for a person stepping over a wall, such as the side wall of a bathtub, said means comprising:

A. a rigid angle plate, said plate having a horizontal area to be disposed on a portion of the top rim of said wall, and an area extending down along a portion of the outside of said wall below the said rim;

B. a rigid hollow member fixedly secured onto the top of the horizontal area of said plate and extending transversely of the rim of said wall said plate extending to either side of said hollow member to stabilize said hollow member relative to a tub wall, said hollow member being open at a first end distal from the downwardly extending portion of said plate, and closed at its second and opposite end except for a central orifice therethrough; said hollow member further having fixedly secured thereto a pair of upwardly extending members spaced from each other along said hollow member and fixedly joined thereabove by a continuous arcuate member lying in a plane parallel to said rigid hollow member to provide a hand grip extending transversely to a tub wall and allowing smooth uninterrupted sliding movement of a person's hand from one to another of said upwardly extending members without need to release the hand's grip during said sliding movement;

C. a slidable member configured in cross section to fit closely and slidably axially within, and relative to, said

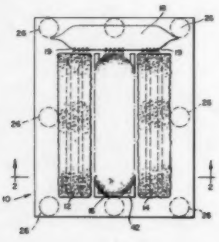
hollow member, and extending in such a manner that a first end of said slidable member projects beyond the said open first end of the hollow member, said slidable member having internal female threading extending coaxially at least partially into its second opposite end with at least a portion of the remainder of said slidable member also being hollow to permit passage therethrough of a male threaded element;

D. a male threaded element extending through the orifice in said second closed end of said hollow member, said threaded element being matingly fitted into the internal threading of said slidable member, and said threaded element terminating outside said orificed end of a single torquing handle; and

E. a clamping member fixedly secured to and extending downwardly from the first end of the slidable member, said clamping member carrying plate means for facing engagement with the inside of said wall;

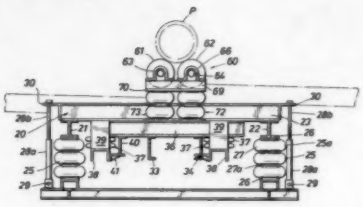
whereby when said rigid plate is disposed on the top rim of, and in abutment with, an upper portion of the outside of said wall, the plate means of the clamping member is disposed in facing abutment with the inside of said wall, and said torquing handle is turned to cause said threaded element to rotate in the proper direction within the female threading of said slidable member, the latter is caused to move axially into the hollow member and draw together the clamping member and its plate means tightly against the inside of the wall and in opposition to the rigid plate on the outside of the wall, thereby to provide rigid support for said hand grip.

4,417,362
BATHROOM FIXTURE
Frank S. Walker, 40 Cedar Ave., Natick, Mass. 01760
Filed Dec. 24, 1981, Ser. No. 334,167
Int. Cl.³ A47K *7/02*
U.S. Cl. 4—606 **1 Claim**



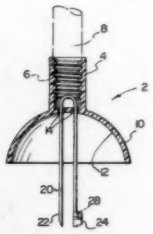
1. In a bathroom fixture a base member and a plurality of cleansing elements detachably secured to said base member in a predetermined relation to said base member and extending outwardly therefrom for engagement with the body of a bather, said base member having means for mounting the same on a wall of a shower for enabling the cleansing elements to be readily engaged by the body of the bather, said means said means for cleansing the body of the bather comprising a plurality of sponges and a brush, said sponges being mounted in spaced parallel V-shaped grooves formed in said base member with a portion of said sponges inserted into said grooves to extend through the grooves on both sides of the base member, a U-shaped channel formed on a surface of said base member between said V-shaped grooves into which a brush is inserted such that the bristles of the brush extend outwardly forming a discontinuous surface against which the bather may rub his body, a liquid soap dispenser mounted at the upper end of said base member for dispensing soap onto the surface of said sponges and brush as the bather presses his body against the surfcae of said sponge-brush assembly, said means for detachably securing the fixture to the shower wall comprising suction cups enabling said fixture to be positioned on the shower wall in various desired positions to facilitate the engagement of the body of the bather relative to the cleansing surface.

4,417,363
METHOD OF SUPPORTING PIPE DURING MACHINING
Roy Lee, Jr., 10134 Briar Dr., Houston, Tex. 77042
Division of Ser. No. 257,185, Apr. 24, 1981. This application Dec. 9, 1982, Ser. No. 448,395
Int. Cl.³ B23G *1/22*
U.S. Cl. 10—107 PH **1 Claim**



1. A method of machining pipe at high cutting speeds comprising the steps of moving a pipe from a pipe rack onto a conveyor, raising the conveyor to substantially align the longitudinal axis of the pipe with the center of the chuck on a machine tool, moving the pipe axially to position its end in the chuck, closing the chuck, transferring the pipe from the conveyor to a steady rest, supporting the steady rest by air pressure confined in a container having flexible side walls to allow limited lateral movement of the steady rest and the rotating pipe, rotating the pipe at the desired speed for tungsten carbide cutting tools, and machining the pipe while said pipe is being rotatably supported on said steady rest.

4,417,364
MOP HOLDER
Dennis A. Hammond, Ottawa, Canada, assignor to Dustbane Products Limited, Ottawa, Canada
Filed Jun. 24, 1982, Ser. No. 391,516
Claims priority, application Canada, Jan. 4, 1982, 393556
Int. Cl.³ A47L *13/24*
U.S. Cl. 15—147 R **8 Claims**



1. A holder for receiving the handle and securing the yarn of of mop or brush comprising:

(a) a sleeve to receive in one end the handle of the mop or brush;

(b) a base having a concave interior surface against which the yarn is to be held, the base being centrally secured to the other end of the sleeve;

(c) a pair of spaced slots in the base extending through the base and located in the portion thereof circumscribed by the sleeve; and

(d) a flexible bundling strap having an elongated body portion, one end of which it is a tail end and the other end of which is a clinching eyelet, through which the tail end of the strap is to pass and which is to securely hold the strap against unpurposeful disengagement, the strap being fitted in the slots so that its tail end and clinching eyelet are positioned on the concave interior side of the base, the yarn to be circumscribed by the strap and securely held thereby within the concave interior of the base.

4,417,365

CLEANING APPARATUS

Hiroshi Murasaki, Sakai, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Apr. 23, 1983, Ser. No. 371,483

Claims priority, application Japan, Apr. 30, 1981, 56-66248

Int. Cl.³ D01H *11/00*

U.S. Cl. 15—256.51 **4 Claims**

1. A cleaning apparatus for cleaning a surface of a member by scraping residual particles off the surface, said apparatus comprising: a blade having a forward edge adapted to be in pressing contact with the surface;

means movably supporting the blade for movement from a position in which it is in pressing contact with the surface of the member to be cleaned to a position in which it is retracted from the surface of the member;

a cleaning member for removing particles from the forward edge of the blade when the blade is in the contact position; and

means for supporting said cleaning member in pressing contact with the blade in the vicinity of said forward edge on the side of the blade facing the uncleaned area of the surface and on which particles are deposited when the blade is in the contact position and for causing said cleaning member to move with the blade during the movement of the blade from the contact position to the retracted position and, while remaining in pressing contact with said one side of the blade, to move from the vicinity of said forward edge to said forward edge during the movement of the blade toward the retracted position, whereby when the blade is retracted, the particles deposited on the forward edge of the blade are scraped off by said cleaning member moving in sliding pressing contact with said foward edge.

4,417,366

HINGE BRACKET MOUNTING PLATE ASSEMBLY HAVING A SPRING BIASED LOCKING MECHANISM

Luciano Salice, Carimate, Italy, assignor to Arturo Salice S.p.A., Novedrate, Italy

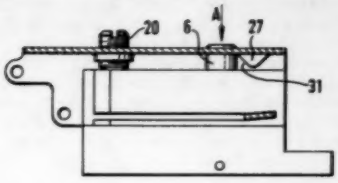
Filed Jun. 16, 1982, Ser. No. 389,048

Claims priority, application Fed. Rep. of Germany, Nov. 17, 1980, 3043334

Int. Cl.³ E05D *5/02, 7/12*

U.S. Cl. 16—258 **8 Claims**

1. A hinge bracket-mounting plate assembly, wherein the hinge bracket-mounting plate assembly comprises a mounting plate, wherein the mounting plate has a track for slidably guiding the hinge bracket in an axial direction and a bore for longitudinally slidably guiding a spring-loaded detent pin, said detent pin includes a free end and protrudes from the bore and is held captive therein by at least one stop in the bore, and wherein the hinge bracket has a first sloping surface arranged to force the detent pin into the bore as the hinge bracket is slidably moved onto the mounting plate, and the hinge bracket also has a second sloping surface which as the hinge bracket is pushed over the detent pin holds the detent pin in a depressed position until the second sloping surface slides past the detent pin, the detent pin then snaps into a detent opening in the hinge bracket so that the detent pin is releasably fixed, said hinge bracket-mounting plate assembly having a locking mechanism of the type used in a retractable ball point pen, said locking



mechanism comprising the spring loaded detent pin and a slider, said locking mechanism is adapted to lock the detent pin in two different positions, said positions including a partly extended position and a fully extended position so that the detent pin is moved from one of said positions to another of said positions when the detent pin is depressed into the bore and then released, the free end of the detent pin lies in the path of the first sloping surface when the detent pin is in the partly extended position, and the detent pin which has been depressed by the first sloping surface snaps into the detent opening and is urged into said detent opening by the spring toward the fully extended position after the second sloping surfaces slides past the detent pin.

4,417,367

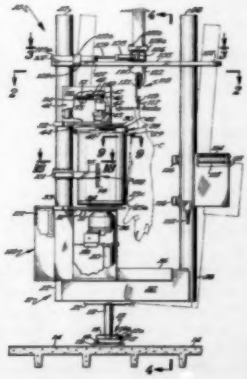
MID-SECTION SKINNING APPARATUS

Lyndon R. Leining, Austin, Minn., assignor to Geo. A. Hormel & Company, Austin, Minn.

Continuation-in-part of Ser. No. 43,041, May 29, 1979, Pat. No. 4,351,088. This application Mar. 1, 1982, Ser. No. 353,526

Int. Cl.³ A22B *5/16*; A22C *17/12*

U.S. Cl. 17—21 **11 Claims**



1. An apparatus for removing the mid-section portion of the skin from the carcass of an animal such as a hog, comprising:

a vertically disposed support frame,

a revolvable cylindrical drum revolvably mounted on said frame,

drive means drivingly connected with said drum for revolving the same,

an elongate skinning blade extending longitudinally of and positioned in close proximity to said drum,

a flap forming blade on said drum and extending longitudinally thereof and making a longitudinal cut in the mid-section portion of the carcass when the carcass is positioned against said drum, gripping means on said drum engaging a longitudinal cut edge of the skin pulling a portion of the skin against the flap forming blade to form and grip the flap of the skin, whereby when said drum is revolved, the skinning blade will progressively remove the mid-section portion of the skin from the carcass,

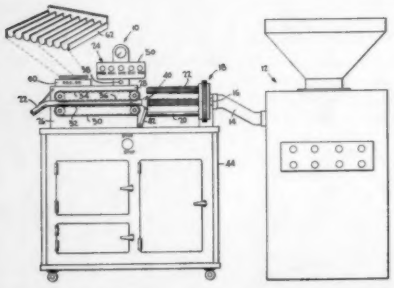
a skin removing assembly including an elongate arm, means mounting one end portion of said arm on said frame, a blade on the other end of said arm, means for shifting said arm between operative and inoperative positions, said arm when in the operative position positioning the blade in close proximity to the drum to remove carcass-disengaged skin therefrom, and said arm when in the inoperative position disposing said blade in spaced relation to said drum.

4,417,368

APPARATUS FOR AND PROCESS OF CONTROLLED SUB-VOLUME FILLING OF CASINGS

Harry G. Washburn, Mt. Prospect, Ill., assignor to Teepak, Inc., Chicago, Ill.

Filed Jul. 24, 1981, Ser. No. 286,316
Int. Cl.³ A22C *11/02*
U.S. Cl. 17—49 **12 Claims**



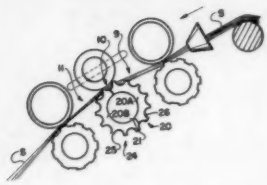
1. An apparatus for the automatic controlled sub-volume filling of a casing, said apparatus comprising in combination a filling machine including filling tube means for supplying a product under pressure into a tubular casing, and a combined casing feed device and cross section shaping device, said combined casing feed and cross section shaping device including conveyor means having opposed spaced runs for receiving therebetween a casing having a filling therein, said conveyor runs defining an elongated casing receiving space having an entrance adjacent said filling tube, said apparatus being particularly adapted to receive a casing normally generally circular in cross section when filled, and said conveyor runs spacing being less than the nominal diameter of the intended casing as to effect a temporary change in casing cross section with the cross-sectional area of said modified cross section is on the order of 85 to 95 percent of the area of said circular cross section.

4,417,369

CONTROL ROLL FOR STAPLE FIBERS

Donald R. Hoover, Rte. 3, Ratchford Rd., Gastonia, N.C. 28052

Filed Nov. 9, 1981, Ser. No. 319,319
Int. Cl.³ D01H *5/00*
U.S. Cl. 19—258 **7 Claims**



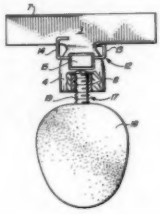
1. In a fiber processing machine having at least two sets of calendar rolls rotating at different speeds and with the nips of the calendar rolls lying in a common plane, the combination of a control roll positioned between the sets of calender rolls and mounted against relative rotation on a driven shaft with the circumference of the control roll extending above the said plane, a circumferentially textured surface on the control roll including a plurality of teeth projecting radially from the control roll at a negative angle, and having a plurality of axially spaced circumferentially extending grooves between the teeth.

4,417,370

POCKET HANDKERCHIEF CLIP

Shawn D. Lewis, P.O. Box 1965, Ruston, La. 71270

Filed Aug. 23, 1982, Ser. No. 410,319
Int. Cl.³ A47L *25/08*; A44B *21/00*
U.S. Cl. 24—3 L **9 Claims**



1. A pocket handkerchief clip for supporting a handkerchief decoration accessory in a pocket comprising:

(a) a base frame having an elongated top portion; a base frame handle extending from said base frame and a fulcrum on one side of said base frame handle;

(b) a pivot frame substantially coextensive with said base frame and having an elongated top portion and a pivot frame handle extending from said pivot frame adjacent said base frame handle and engaging said fulcrum on said base frame;

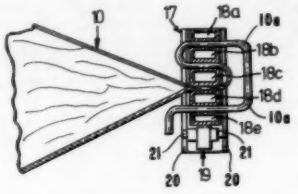
(c) bias means engaging said base frame handle and said pivot frame handle and biasing at least a portion of said base frame against said pivot frame and said pivot frame handle against said fulcrum to close at least a portion of said pivot frame against said base frame; and further comprising a lint pad rigidly secured closely adjacent said base frame handle at the end opposite of said elongated top portions for supporting said pocket handkerchief clip in the pocket.

4,417,371

CLOSURE FOR FLEXIBLE CONTAINERS

Kurt Kronenberg, Mühlenbergweg 10, 5485 Sinzig, Fed. Rep. of Germany

Filed Jan. 29, 1981, Ser. No. 229,395
Claims priority, application Fed. Rep. of Germany, Feb. 9, 1980, 3004884
Int. Cl.³ B65D 77/10; A44B 21/00
U.S. Cl. 24—30.5 R 2 Claims



1. In a closure for flexible containers of semi-finished products adapted for transportation and storage of flowable or pourable goods with several clamp members which are arranged one on top of the other in lateral supports and are securable to one another in their position, and one end of the semi-finished product can be led through separation places of the clamp members, the improvement wherein

said supports surround ends of said clamp members,

said clamp members are arranged displaceable relative to one another in the supports,

clamping means insertable into each of said supports for clamping said clamp members relative to each other,

said supports have arms formed with bores,

said clamping means each comprises an eccentric member having lateral pins insertable into said bores of said arms of said supports,

said eccentric member comprises a two-piece case which is axially telescopical, and

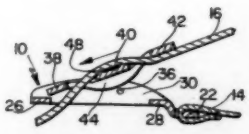
compression spring means for biasing said two-piece case.

4,417,372

ADJUSTABLE BUCKLE CONSTRUCTION

Fernando M. Ronci, Providence, R.I., assignor to F. Ronci Company, Inc., No. Providence, R.I.

Filed Sep. 29, 1982, Ser. No. 432,545
Int. Cl.³ A44B 11/00
U.S. Cl. 24—163 R 1 Claim



1. An adjustable buckle construction comprising:

(a) first strap end portion;

(b) a base member having spaced first and second cross elements with an open interior area therebetween, a loop element adjacent said second cross element and a pair of spaced side walls which extend upwardly adjacent opposite side edges of said open area;

(c) means securing said first strap end portion to said loop element;

(d) a second strap end portion;

(e) a clasp member having spaced first, second and third transverse cross bars, said clasp member being of slightly smaller transverse dimension and slightly greater longitudinal dimension than said base member open area, and having a pair of spaced side walls which extend downwardly between said cross bars on the sides of said clasp member, said second strap end portion being received in interwoven relation on said clasp member so that it extends upwardly between said first and second cross bars, downwardly between said second and third cross bars, across the underside of said third cross bar and outwardly therefrom, said clasp member being received on said base member through said open area from the underside of said base member so that said first cross bar overlies said first cross element and so that the free end of said second strap end portion overlies said second cross element and is interposed between said second cross element and said third cross bar and extends outwardly therefrom; and

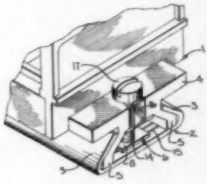
(f) detent means on said base member side walls engaging the upper edges of said clasp member side walls between said second and third cross bars thereof and thereby releasably locking said clasp member on said base member.

4,417,373

CHANNEL CLAMP

Josef Keglewitsch, Bowling Green, Ohio, assignor to Marathon Electric Manufacturing Corporation, Wausau, Wis.

Filed Oct. 26, 1981, Ser. No. 314,852
Int. Cl.³ A44B 21/00; F16D 1/00
U.S. Cl. 24—458 6 Claims



1. An U-shaped clamp having overlapping members defining a clamping opening for securing an electrical connector support member to a base member, which comprises a lower leg extending over the base member when the clamp is applied thereto and terminating at the inner end in a reverse bend which joins the lower leg to an upper leg which overlies the lower leg, said upper leg being located in opposed relation to the support member, and the upper leg extends on a taper from the reverse bend to a flat portion extending over the lower leg, a threaded hole provided in the flat portion, and threaded means provided to extend through said threaded hole and into engagement with the lower leg and operable to move the upper leg into clamping engagement with the support member to secure the clamp and connector to the base member.

4,417,374

APPARATUS FOR SIMULTANEOUSLY SIZING OF A LARGE NUMBER OF LONG FIBER YARNS

Susumu Kuroda, Nagoya, and Tadashi Komori, Fukui, both of Japan, assignors to Kawamoto Industrial Co., Ltd., Nagoya, Japan

Filed Mar. 11, 1981, Ser. No. 242,430
Claims priority, application Japan, May 9, 1980, 55-61885
Int. Cl.³ D02H 5/02, 13/20
U.S. Cl. 28—181 9 Claims

1. An apparatus for the simultaneous sizing of a large number of yarns, comprising:

beam stand sections having several beam stands;

sizing sections having first reeds, guide rollers, sizing devices having immersion rollers to immerse warps in sizing solutions and squeezing rollers;

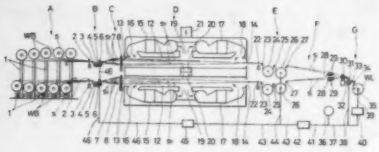
water pipe wet dividing sections having a number which is one less than a multiple number of several times that of the

number of said beam stands, a half of said dividing water pipes being spaced substantially evenly extending upwardly and diagonally from a base-end water pipe and another half of said dividing water pipes being spaced substantially evenly extending downwardly and diagonally also from said base-end water pipe;

hot air drying sections having second reeds and hot air drying chambers in which hot air generating devices are incorporated;

cylinder drying sections having heating cylinders and guide rollers placed in front and back of said heating cylinders;

at least two systems of warp sizing and drying mechanisms in which the relative positions of said sizing sections, said wet dividing sections, said hot air drying sections, and said cylinder drying sections are placed substantially identically and vertically;



a winding section having an adjustable reed and a winding device which comprises a measuring roller, a beaming roller, and a driving shaft for a weaver's beam;

dividing sections having driving rods positioned between said winding section and said cylinder drying section of said warp sizing and drying mechanism of each system, the length of said dividing section being equal for each system;

a driving motor connected to said beaming roller of said winding section through a transmitting shaft;

said driving motor being connected through a draft adjusting device to said heating cylinders of each system by transmitting shafts; and

said heating cylinders being connected through a draft adjusting device to said squeezing rollers of each system by transmitting shafts.

4,417,375

APPARATUS FOR INTERLACING MULTIFILAMENT YARN BY FLUID

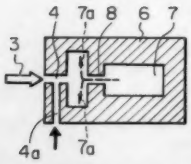
Takao Sano; Masafumi Ogasawara, both of Otsu, and Hiroshi Tsubakimori, Kyoto, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 888,666, Mar. 21, 1978, abandoned. This application Apr. 28, 1980, Ser. No. 144,031

Claims priority, application Japan, Mar. 30, 1977, 52-34658; Mar. 30, 1977, 52-34660

Int. Cl.[3] **D02G** *1/16;* **D02J** *1/08*

U.S. Cl. 28—272 **8 Claims**



1. An apparatus for interlacing a multifilament yarn by fluid comprising:

(a) a yarn treating member;

(b) a rectangular yarn passage provided through the yarn treating member, through which the yarn to be treated is passed in a continuous running state;

(c) a fluid supply nozzle provided in the yarn treating member for continuously feeding a jet stream of fluid, one end of the fluid supply nozzle being connected to a fluid supply source, the other end of the fluid supply nozzle being opened to the yarn passage and, the axis of the fluid supply nozzle intersecting the axis of the yarn passage at a substantially right angle;

(d) a fluid introduction aperture provided in the yarn treating member, one end of the fluid introduction aperture being connected to an introduction fluid source and the other end of the fluid introduction aperture being opened to the fluid supply nozzle;

(e) fluid exit ports provided only at the inlet and outlet of the yarn treating passage;

(f) a resonance tube provided in the yarn treating member, one end of the resonance tube being closed, the other end of the resonance tube being opened to the yarn passage with a throttled neck portion and, the resonance tube being disposed coaxially with the fluid supply nozzle through the yarn passage;

(g) a wall substantially enclosing said yarn passage provided for contact with the moving yarn during the treating of the yarn in the yarn passage with the fluid; and

(h) a valve for adjusting the quantity of fluid flow to the fluid introduction aperture is provided for controlling the yarn treating fluid to an oscillation of resonance sharpness of at least 2 at the position of the outlet of the yarn passage.

4,417,376

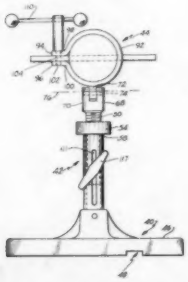
ADJUSTABLE CYLINDER HEAD HOLDER

James A. Kammeraad, Holland, Mich., and Ronald L. Tiger, Joplin, Mo., assignors to K-Line Industries, Inc., Holland, Mich.

Continuation of Ser. No. 94,453, Nov. 15, 1979, abandoned. This application Feb. 1, 1982, Ser. No. 344,866

Int. Cl.[3] **B23P** *7/00;* **B23Q** *3/04*

U.S. Cl. 29—26 A **5 Claims**



1. A cylinder head stand usable to support a cylinder head of an internal combustion engine during valve guide reworking and the like and being usable with a positioning means which includes an elongated member, said stand comprising:

a base having a transverse slot adapted to receive said elongated member;

a generally vertically oriented pedestal extending fr ɔm said base;

a post telescopingly disposed within said pedestal;

vertical adjustment means operatively engaging said post for vertically positioning said post relative to said pedestal;

a cylinder head support plate having means for supporting the cylinder head; and

angular and rotational adjustment means on said post for permitting angular and rotational adjustment of the head

support plate about two perpendicularly related axes and in the same vertical plane, said angular and rotational adjustment means comprising:

a rotational member, said head support plate being mounted on said rotational member;

clamp means on said post and engaging said rotational member for clamping the rotational member in a plurality of positions, said clamp means permitting said rotational member to be rotated about a rotational axis through an angle of 360°; and

a knuckle joint means carried by said post including a first member and a second member for permitting limited angular adjustment of said head support plate, said second member being pivotal about an axis in a plane parallel to the axis of rotation of said rotational member and perpendicular to the axis of rotation of said rotational member.

4,417,377

TOOL PROVIDING FOR THE AUTOMATIC EXCHANGE OF DIFFERENT WORKING FIXTURES

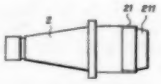
Josef Brezina, Rokycany, Czechoslovakia, assignor to SKODA, Pilsen, Czechoslovakia

Filed Mar. 13, 1981, Ser. No. 243,585

Claims priority, application Czechoslovakia, Mar. 13, 1980, 1731-80; Mar. 13, 1980, 1732-80; Mar. 13, 1980, 1733-80

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—26 A **12 Claims**



1. Apparatus for the automatic exchange of different tool fixtures particularly adapted for digitally controlled coordinate machine tools having a driven spindle, comprising a number of tool fixtures, a main holder forming a unit with the spindle of a machine tool, and a storage container for tool fixtures, each tool fixture being provided with a clamping thread and concentrically therewith a side-tracking thread of opposite hand, the main holder being provided with a clamping thread adapted to be positioned in axial alignment with the clamping thread of the tool fixture, and the storage container being provided with a side-tracking thread in axial alignment with the side-tracking thread of the tool fixture, the clamping thread on the main holder being of the same hand as the clamping thread on the tool fixture, and the side-tracking thread on the tool fixture being of the same hand as the side-tracking thread on the storage container.

4,417,378

APPARATUS FOR APPLYING HEAT SHRINKABLE TUBING

Christopher K. Brown, Camp Hill; Willard L. Busler, and Donald A. Wion, both of Harrisburg, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 3, 1981, Ser. No. 239,968

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—33 M **6 Claims**

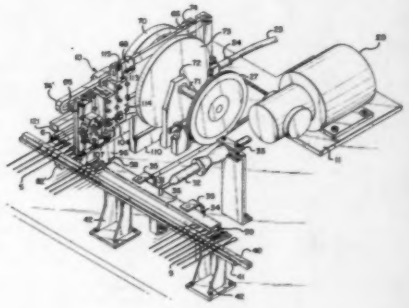
1. Apparatus for applying heat shrinkable tubing to the leading end of a wire comprises:

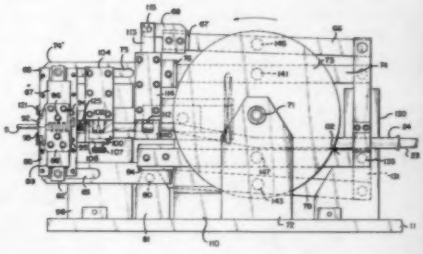
feed means for feeding a continuous length of tubing axially through a shear zone, said feed means comprising a feed clamp and a stationary clamp, said first clamp being arranged to clamp said tubing and advance it through said shear zone while said stationary clamp is in the open position, said stationary clamp being arranged to hold said tubing stationary while said feed clamp is in the open position and retreating over said stationary tubing,

shear means for shearing a section of said tubing at said shear zone, said shear means comprising an upper blade and a lower blade, said blades being adapted to move together to shear said section of tubing from said continuous length of tubing,

positioning means for holding said section of tubing and advancing said section to an application zone where said section is applied to the leading end of a wire, said positioning means comprising an upper jaw fixed to said upper shear blade and a lower jaw fixed to said lower shear blade, said jaws being profiled to hold said section of tubing therebetween when said jaws are in the closed position, said upper jaw and upper blade being fixed with respect to said first clamp,

drive means for imparting motion to said feed means, shear





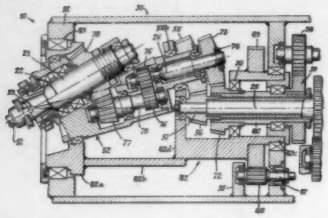
means, and positioning means, said drive means comprising an upper jaw lever, a lower jaw lever, and a stationary clamp lever, each said lever having a pivot end, a component end, and a cam follower mounted therebetween, each said cam follower riding in a respective continuous groove profiled in a disc, said disc being carried by a cam shaft driven by a motor, said grooves being profiled to effect the opening and closing motions of said jaws and clamps as said shaft rotates, said upper jaw and feed clamp being carried in a slot at the component end of said upper jaw lever, said lower jaw being carried in a slot at the component end of said lower jaw lever, said jaws and first clamp being reciprocably slidable in said slots to advance said tubing through said shear zone toward said application zone, said jaws and feed clamp being reciprocated by a tubing advance shaft, said advance shaft carrying a cam follower which rides in a continuous cam groove in a disc carried by said cam shaft.

4,417,379

MACHINE TOOL HEAD HAVING NUTATING SPINDLE

Keith F. Goode, Rockford, Ill., assignor to The Ingersoll Milling Machine Company, Rockford, Ill.

Filed Nov. 12, 1982, Ser. No. 440,832
Int. Cl.³ B23Q 5/22; B23C 1/12
U.S. Cl. 29—35.5 2 Claims



1. A nutatable-spindle machine-tool head comprising

a head frame in the form of a housing having a front face,

an elongated first rotary slide mounted for rotation in said head frame by a front face hub journalled in the front face of the head frame and by an axially remote, stabilizing tail bearing in the head frame,

a second rotary slide mounted for rotation in the first rotary slide by a front face hub journalled in the front face hub of the first slide and by an axially remote, stabilizing tail bearing in the first slide,

a spindle journalled in the face hub of said second slide and by an axially remote stabilizing tail bearing in the second slide,

the axes of rotation of said spindle and of said two slides intersecting in a single point at the front of the spindle and closely adjacent the front face of the head frame with a common acute angle between the spindle axis and that of the second slide and between the axes of two slides, whereby the axis of a tool carried by the spindle can assume any position within a conical envelope having its apex at said point and having an apex angle four times the said common angle,

a planetary gear train for driving the spindle and having a drive gear coaxial with said first rotary slide and a driven gear on the spindle and including at least two meshing pairs of bevel gears, and

separate power means for turning said spindle drive gear and for positioning said rotary slides rotatively about their respective axis,

the major part of the radial cutting load on said spindle being transmitted from slide to slide and to the head frame essentially in the plane of the front face of the head frame.

4,417,380

METHOD OF FORMING METAL RING IN A BEARING

Jose Rosan, Jr., Newport Beach, Calif., assignor to Rexnord Inc., Milwaukee, Wis.

Filed Sep. 24, 1981, Ser. No. 305,134
Int. Cl.³ B23P 11/00; F16C 13/00, 35/00
U.S. Cl. 29—148.4 R 1 Claim

1. A method of inserting a bushing means into a soft non-ferrous material such as aluminum comprising the steps of:

(a) first preparing a special bushing means which contains an upper portion having an area about 25% of the distance from the top which is about ½ a millimeter greater in diameter than the lower portion; this greater diameter area ends in a forming shoulder;

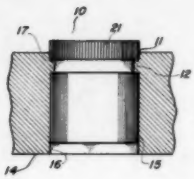
(b) adding serrations to the upper portion of said bushing means;

(c) preparing an annular groove about ½ millimeter deeper than said lower portion and about 1 millimeter in length between said upper portion and said lower portion;

(d) preparing a bore in a workpiece of said soft non-ferrous material generally equal in diameter to the lower portion of said bushing means;

(e) inserting said bushing means into the bore;

(f) forming a metal ring within the annular groove by the swaging action of the forming shoulder upon said workpiece; and



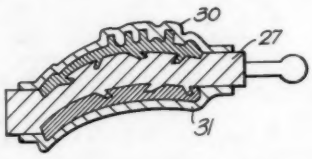
(g) locking said bushing means into said workpiece by the forming action of the metal ring of the workpiece material, the annular groove of the bushing means and the serrations in the upper portion.

4,417,381

METHOD OF MAKING GAS TURBINE ENGINE BLADES

Gordon J. S. Higginbotham, Derby Abbey, England, assignor to Rolls-Royce Limited, London, England

Filed Mar. 8, 1982, Ser. No. 355,620
Claims priority, application United Kingdom, Apr. 14, 1981, 8111778
Int. Cl.³ B23P 17/02
U.S. Cl. 29—156.8 H 4 Claims



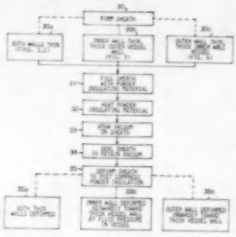
1. A method of manufacturing a gas turbine engine blade or vane comprising two halves includes the steps of providing a first female mould the interior mould surface of which defines the internal surface of one blade half, providing a second female mould, the interior mould surface of which defines the external surface of the one blade half, providing a common intermediate member interposed between the first and second moulds, injecting wax to form patterns within the two mould cavities formed by the first and second moulds together with the common intermediate member, removing the first and second moulds from the common intermediate member to leave the wax patterns attached to the common intermediate member, applying a layer or layers of ceramic material to the wax patterns, firing the ceramic such as to rigidify it and remove the wax therefrom, removing the ceramic portions from the common intermediate member and locating them together to define a casting cavity therebetween, providing a runner system to communicate with the casting cavity and applying a further ceramic layer or layers to the exterior surfaces of the two ceramic portions to secure them together, subsequently firing the assembly and thereafter casting it with liquid metal to form a blade half and furthermore forming a second blade half portion using a further set of moulds and a common, intermediate member by repeating the above steps, and thereafter securing the two completed blade halves together to form a blade.

4,417,382

METHOD OF THERMALLY INSULATING VESSELS

Lothar Schilf, Am Freihad 9, 2807 Achim, Fed. Rep. of Germany

Division of Ser. No. 133,408, Mar. 24, 1980, Pat. No. 4,349,051.
This application Mar. 4, 1982, Ser. No. 354,706
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1979, 2911416
Int. Cl.³ B23P 17/00; B21D 22/10
U.S. Cl. 29—421 R 7 Claims



1. A method of thermally insulating the pressure containing side of high pressure vessels and pipes, comprising the steps of forming a sheath having spaced walls,

filling the sheath with a powder insulating material comprising powder particles with open pores and irregular form,

drawing a vacuum in said sheath through an opening in the sheath,

heating said insulating material,

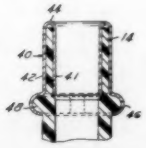
sealing said opening while maintaining the vacuum, and irreversibly deforming the inside wall portion of the sheath after sealing the sheath to postcompress the insulating material, wherein said step of forming the sheath comprises forming the sheath with a thick wall and a thinner deformable wall, and irreversibly deforming the thinner wall toward the thick wall after sealing the sheath, and wherein the thick wall is a vessel with a rigid wall and the thinner wall is within the vessel, and said step of irreversibly deforming comprises deforming the thinner wall radially toward the thicker wall to postcompress the insulating material.

4,417,383

METHOD OF ASSEMBLING PIPE JOINT

David L. Anderson, Muskegon, and A. David Joseph, North Muskegon, both of Mich., assignors to Sealed Power Corporation, Muskegon, Mich.

Division of Ser. No. 132,875, Mar. 24, 1980, Pat. No. 4,351,550, which is a division of Ser. No. 52,667, Jun. 27, 1979, Pat. No. 4,224,161, which is a continuation-in-part of Ser. No. 906,256, May 15, 1978, abandoned. This application Mar. 22, 1982, Ser. No. 360,245
Int. Cl.³ B21D 39/00; B23P 11/00
U.S. Cl. 29—511 5 Claims



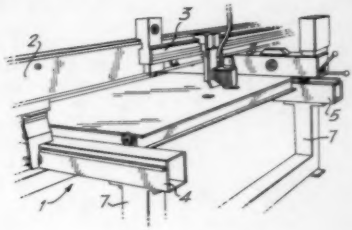
1. A method of forming an air tight metal-to-plastic pipe joint for use in an oil filtering system which includes a metal pump housing having an opening, and an inlet screen assembly having a plastic pipe adapted at one end to communicate with said opening, said method comprising the steps of (a) providing a metal eyelet having inner and outer cylindrical portions connected at one eyelet end with said outer portion having a flanged portion remote from said one eyelet end, (b) placing said eyelet over said one pipe end, and (c) forming said flanged portion of said eyelet over a rib on said pipe such that said rib acts to retain said eyelet on said pipe end.

4,417,384

MEMBERS FOR SUPPORTING A MOVABLE LOAD

Thomas Wilkinson, Andover, England, assignor to Hancock Cutting Machines Limited, England

Filed Sep. 1, 1981, Ser. No. 298,419
Claims priority, application United Kingdom, Oct. 2, 1980, 8031824
Int. Cl.³ B23P 19/04
U.S. Cl. 29—526 R 8 Claims



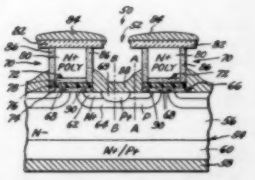
1. An elongated member for supporting and locating a load movable along the length of said elongated member, said elongated member comprising a first relatively rigid elongated part for supporting the weight of said movable load, a second relatively resilient elongated part for locating the movable load on said elongated member, a plurality of spaced dowels extending along the length of said elongated member, said dowels engaging said first and second parts for locating said second part at a predetermined position with respect to said first part, and means for fastening said first and second parts together.

4,417,385

PROCESSES FOR MANUFACTURING INSULATED-GATE SEMICONDUCTOR DEVICES WITH INTEGRAL SHORTS

Victor A. K. Temple, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,731
Int. Cl.³ H01L 21/265
U.S. Cl. 29—571 35 Claims



1. A self-aligned process for manufacturing an insulated-gate semiconductor device including an integral short, said process comprising:

providing a semiconductor wafer including a first region of one conductivity type having a principal surface, and preparing the wafer by forming on the principal surface a gate insulating region layer, forming on the gate insulating region layer a conductive gate electrode layer, and form-

ing on the conductive gate electrode layer an overhang layer;

forming an etch resist mask having openings defining the ultimate location of upper electrode regions, and then etching in areas defined by the mask openings through the overhang layer and through the conductive gate electrode layer at least to the gate insulating region layer, with lateral etching of the conductive gate electrode layer to undercut the overhand layer, thereby defining gate electrodes extending upwardly from and spaced along the first region principal surface, with overhanging portions of the overhang layer on the upper surfaces of the gate electrodes;

oxidizing at least the conductive gate electrode sidewalls;

introducing into the first region between the gate electrodes impurities appropriate to form a base region of opposite conductivity type and an upper electrode region of the one conductivity type within the base region, the gate electrodes serving as masks during the introduction of impurities, and diffusing the impurities introduced to appropriately locate and configure the base and upper electrode regions such that at the principal surface the base region exists as a band of opposite conductivity type between the upper electrode region and the first region, with active portions of the band underlying at least a portion of at least one gate electrode and being separated therefrom by portions of the gate insulating region layer;

forming a shorting extension of the base region up through and to a portion of the surface of the upper electrode region intermediate and spaced from the gate electrodes to facilitate an ohmic connection between the base and upper electrode regions, the forming of the shorting extension being accomplished by employing the overhang of the overhang layer as a mask to define said portion of the surface of the upper electrode region; and

forming a metallized gate terminal in electrical contact with the conductive gate electrodes, and forming a metallized upper electrode region terminal in electrical contact with the upper electrode region and with the shorting extension.

4,417,386

METHOD FOR MOUNTING A SEMICONDUCTOR DEVICE IN A HOUSING

Klaus D. Exner, Unterhaching, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Dec. 22, 1980, Ser. No. 218,498

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001613

Int. Cl.³ H01L *7/24*

U.S. Cl. 29—590 **9 Claims**

1. Method of mounting a semiconductor device in a housing, which comprises first providing a chromium layer on a part of the surface of the monocrystalline silicon semiconductor body of the semiconductor device to be connected to the housing, covering the chromium layer with a silver layer, subsequently permanently connecting the sliver layer on the chromium layer on the monocrystalline silicon semiconductor body to a part of the housing being in the form of a substrate with an adhesive to which silver particles have been added, and connecting electrodes of the semiconductor device with wire connections to terminals disposed in the housing.

4,417,387

GOLD METALLIZATION IN SEMICONDUCTOR DEVICES

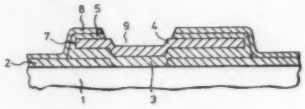
Christopher J. Heslop, Woodbridge, England, assignor to The Post Office, London, England

Filed Apr. 15, 1981, Ser. No. 254,513

Claims priority, application United Kingdom, Apr. 17, 1980, 80 12688

Int. Cl.³ H01C *17/28*

U.S. Cl. 29—591 **9 Claims**



1. In a method of preparing a semiconductor device including the steps of providing a semiconductor substrate, depositing a layer of titanium over at least part of said substrate, and covering at least part of said titanium layer with a metallisation layer of gold, the improvement wherein all of said gold metallisation layer including its side edges is covered with a second layer of titanium to encase said gold metallisation layer in said titanium.

4,417,388

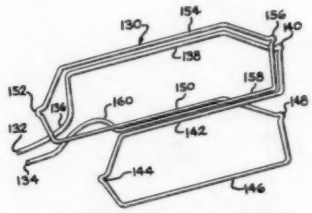
METHOD OF MAKING A MULTIPLE OPEN TURN LAP WOUND DYNAMOELECTRIC MACHINE

Jeffrey T. Major, Cygnet, Ohio, assignor to Allied Corporation, Morristown, N.J.

Filed Nov. 28, 1980, Ser. No. 211,483

Int. Cl.³ H02K *15/06*

U.S. Cl. 29—598 **2 Claims**



1. A method for placing a winding on an armature of a four pole lap wound direct current machine, said armature including a plurality of commutator segments and a laminated core with a plurality of slots formed therein, comprising:

free forming a continuous elongated conductor having two ends into a plurality of open turns with each said turns having two sides, said formed conductor having substantially a final shape of said conductor on said core and having four said sides spaced to engage four different slots in said core spaced 90° apart; then

spreading said sides apart and positioning said formed conductor about said armature core; then

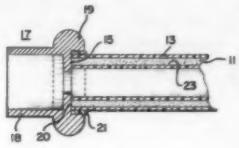
positioning said four sides in said four different slots in said core; and then

attaching said conductor ends to two different commutator segments disposed substantially adjacent each other.

4,417,389
METHOD OF TERMINATING CARBON CERAMIC COMPOSITION RESISTORS FOR USE IN HIGH PEAK POWER AND PEAK VOLTAGE ENERGY DISSIPATION APPLICATION

John B. Lopacki, North Tonawanda, and Harry R. Emes, Niagara Falls, both of N.Y., assignors to Kennecott Corporation, Stamford, Conn.

Filed Feb. 26, 1982, Ser. No. 352,962
Int. Cl.³ H01C 17/28
U.S. Cl. 29—619 **5 Claims**



1. A method of producing an electrical resistor comprising the steps of:

a. forming a resistance core member of conductive material in a dielectric matrix material having end and side portions,

b. forming an end cap member having an internal contact surface and a receiving portion, said receiving portion adapted to spacedly receive said core member allowing a space between about 0.08 and about 0.64 cm. between the side portion of said core member and said receiving portion, said cap member having an outward-extending radial portion thereon adapted to extend outward from about 0.16 to about 1.27 cm. from the side of said core when said cap member is mounted on said core,

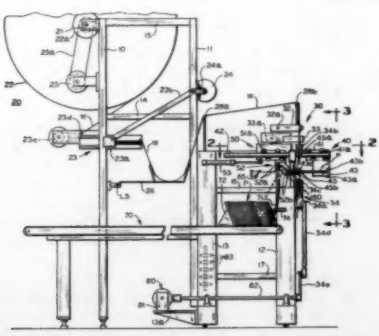
c. spacedly mounting said core member within the receiving portion of said cap member, placing the contact surface of said cap member into electrical contact with the end of said core member, and

d. filling said space between the side portion of said core member and the receiving portion of said cap member with an electrically insulating material.

4,417,390
BATTERY PLATE WRAPPER MACHINE

Robert D. Simonton, Fremont, Ohio, assignor to Mac Engineering and Equipment Co., Inc., Benton Harbor, Mich.

Filed Jul. 15, 1977, Ser. No. 815,814
Int. Cl.³ H01M 2/14
U.S. Cl. 29—730 **16 Claims**



1. A machine for wrapping electrical storage battery plates comprising a fixture for supporting individual battery plates and moveable between a first plate loading position and a second wrapper folding position; means for positioning individual sheets adapted to be wrapped around individual plates in a sheet station with their longitudinal center aligned generally with and intersected by the path of movement of said fixture and proximate to said fixture and a side of a fixture supported plate; a pair of spaced members defining an aperture in registry with the path of movement of said fixture and of a width to receive the sheet and leading edge of a fixture supported plate and to constrain said sheet against said fixture and plate, said members being located on the side of said sheet positioning means opposite said first position of said fixture, said fixture movement displacing a portion of a fixture supported plate enfolded in a sheet beyond the side of said spaced members remote from said sheet positioning means when said fixture is in said second wrapper folding position; gripper means for gripping the leading edge of a fixture supported plate and a plate enfolding sheet on the side of said spaced members opposite said sheet positioning means; means for actuating said gripper means to grip said plate and enfolding sheet while said fixture supports said plate; traversing means for said gripper means to carry said gripper means and a sheet enfolded plate gripped thereby along a path between a third position in said aperture between said spaced members and a fourth position freeing said sheet enfolded plate from said spaced members; and bonding means located along said path for bonding together the overlapping edge of the plate enfolding sheet portions.

4,417,391
METHOD FOR FORMING A STAGGERED RECORDING HEAD

Sherman L. Rutherford, Sudbury, Mass.; Arthur E. Bliss, Sunnyvale, and Noel J. Schmidt, Palo Alto, both of Calif., assignors to Benson, Inc., San Jose, Calif.

Division of Ser. No. 155,937, Jun. 3, 1980. This application Jun. 8, 1982, Ser. No. 386,173
Int. Cl.³ H01R 43/00
U.S. Cl. 29—825 **3 Claims**

1. A method for forming an electrostatic printer recording head containing four rows of staggered styli comprising;

winding a first row of wires on a cylindrical drum the surface of which is double threaded, said drum having a flat formed on a portion of the surface along the length of the drum parallel to the axis of rotation of the drum, said first row of wires occupying every other groove on the drum surface;

placing a spacer along the flat and over the wires in the first row;

winding a second row of wires in the groove between the first row of wires and over said spacer;

placing a spacer along said flat and over said second row of wires;

winding a third row of wires in the groove formed between said first row and said second row of wire leaving a space between the wires in said third row;

placing a spacer along the flat over said third row of wires;

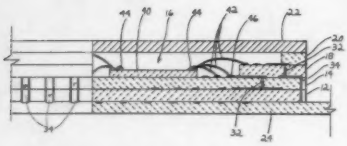
winding a fourth row of wires in the space between said third row of wires;

thereby to form four rows of wires wherein said second row of wire is offset from said first row of wire by approximately one wire diameter, said third row of wire is offset from said first row of wire by approximately one-half wire diameter and said fourth row of wire is offset from said first row of wire by approximately one and one-half wire diameter.

4,417,392
PROCESS OF MAKING MULTI-LAYER CERAMIC PACKAGE

Shawki S. Ibrahim, and James E. Elsner, both of Lafayette, Ind., assignors to CTS Corporation, Elkhart, Ind.

Division of Ser. No. 149,968, May 15, 1980, Pat. No. 4,320,438. This application Oct. 19, 1981, Ser. No. 312,729
Int. Cl.³ H05K 3/34
U.S. Cl. 29—840 6 Claims

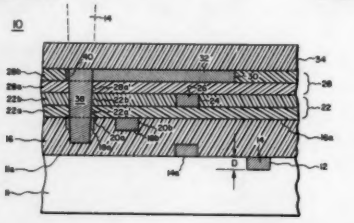


1. In a process for producing a high component density multi-layer monolithic LSI ceramic package, comprising the steps of forming metalized conductor patterns on the surfaces of a plurality of laminas, bonding together the plurality of laminas including a lamina adapted to receive individual chips of a chip array, disposing at least one chip on said lamina, the conductive patterns disposed on respective ones of said laminas with the ends of the conductive patterns spaced at least 10 mil apart and the conductive pattern ends of one lamina disposed in alternating relationship relative to the ends located on an adjacent lamina, selected laminas having metallized conductive means comprising metalized-filled openings forming conductive paths between conductive patterns on selected ones of the laminas forming the ceramic package and edge-formed metalized conductive paths interconnecting conductive patterns on the multi-layer ceramic laminas, forming wire bonds on selected ones of said conductive pattern ends, and forming alternating wire connections from said chip to said wire bonds so that said wire connections maintain the not less than 10 mil spacing of said wire bonds respectively by extending between said chip at one end to wire bonds of selected ones of the alternative conductive pattern ends of the adjacent levels of laminas at the other end to provide electrical connections from the chip to said conductive patterns, whereby a high component density chip array may be mounted in said LSI ceramic package.

4,417,393
METHOD OF FABRICATING HIGH DENSITY ELECTRONIC CIRCUITS HAVING VERY NARROW CONDUCTORS

Charles A. Becker, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1981, Ser. No. 249,599
Int. Cl.³ H05K 3/46
U.S. Cl. 29—846 14 Claims



1. A method for fabricating a conductive circuit for interconnecting a plurality of locations, comprising the steps of:

providing an insulative material substrate, having a first surface;

fabricating by laser machining at least one channel into said substrate through said first surface;

positioning each of the at least one channel to interconnect preselected ones of the plurality of locations;

filling the at least one channel with conductive material to provide at least one conductor each interconnecting preselected locations;

fabricating a first solid sublayer of an insulative and relatively non-laser-machineable material upon said substrate first surface;

fabricating a second solid sublayer of an insulative and relatively laser-machineable material upon that surface of said first sublayer furthest from said substrate;

fabricating oy laser machining at least one other channel at least partially through the thickness of only said second sublayer;

filling the at least one other channel with conductive material to provide at least one other conductor each interconnecting other preselected locations; and

so positioning the at least one other channel as to insulate the additional conductor material therein from the conductive material in the at least one channel.

4,417,394
METHOD AND APPARATUS FOR POSITIONING AN EXPANDABLE INSULATING SLEEVE ON A CONNECTOR

Roy A. Moody, Flossmoor; John J. Bulanda, New Lenox; Cazimir M. Guzay, Des Plaines, all of Ill., and David R. Schoenfeld, Salt Lake City, Utah, assignors to Pandeit Corp., Tinley Park, Ill.

Division of Ser. No. 709,845, Jul. 29, 1976, abandoned. This application Mar. 28, 1977, Ser. No. 781,907
Int. Cl.³ H01R 43/00
U.S. Cl. 29—882 22 Claims

1. Apparatus for insulating a connector mechanically joined to one end of an electrical conductor by positioning a radially expandable resilient insulating sleeve, having an inside diameter in its non-expanded condition smaller than the largest cross-sectional dimension of said connector about said connector, said sleeve in its non-expanded condition having a generally uniform wall thickness and a generally constant inside diameter throughout its length, said connector including one end portion mechanically joined to said conductor and a terminal end portion for connection to another electrical component, said apparatus comprising:

expansion means for radially expanding said sleeve sufficiently to receive said connector prior to association of the connector with said apparatus, said expansion means increasing every inside cross-sectional dimension of said sleeve and simultaneously radially expanding substantially the entire length of said sleeve; and

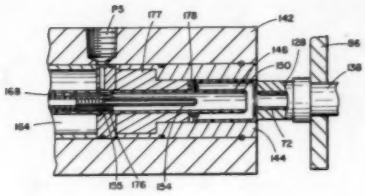
holding means for maintaining said sleeve in its expanded condition and for permitting said connector to be received, terminal end portion first, into said expanded sleeve; and

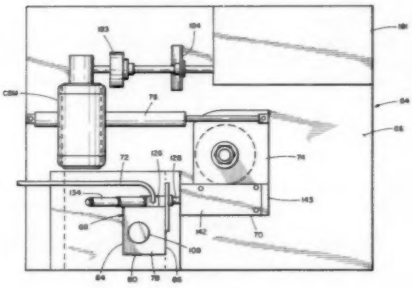
release means operable to release said sleeve from its expanded condition whereby after said sleeve is held expanded and said connector inserted therein, operation of said release means frees said sleeve to become disposed about and compressively hold said connector, said sleeve is an end portion of a length of radially expandable resilient insulating tubing, said apparatus further comprising cutter means for severing said sleeve in its expanded condition from the remainder of said length of tubing.

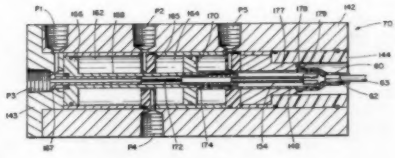
21. A method of insulating a connector mechanically joined to one end of an electrical conductor by positioning a radially expandable resilient insulating sleeve, having an inside diameter in its non-expanded condition smaller than the largest cross-sectional dimension of said connector about said connector, said sleeve in its non-expanded condition having a generally

uniform wall thickness and a generally constant inside diameter throughout its length, said connector including one end portion mechanically joined to said conductor and a terminal end portion for connection to another electrical component, said sleeve having a length at least substantially equal to that of said one end portion of said connector; said method comprising the following steps:

radially expanding said sleeve sufficiently to receive said connector prior to association of said connector with said sleeve, every inside cross-sectional dimension of said sleeve being increased and substantially the entire length of said sleeve being simultaneously radially expanded;







holding said sleeve in its expanded condition;

inserting said connector, terminal end portion first, into said expanded sleeve; and

releasing said sleeve from its expanded condition whereby said sleeve contracts about and effectively insulates said connector, said sleeve is the end portion of a length of radially expandable resilient insulating tubing, said method further comprising the step of severing said sleeve from the remainder of said length of tubing after expanding said tubing and before inserting said connector into said sleeve.

4,417,395

METHOD OF MAKING AN ELECTRICAL CONDUCTOR HAVING AN INTEGRAL ELECTRICAL CONTACT

James R. Hall, Bainbridge, and William P. Whallon, Jr., Unadilla, both of N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Continuation of Ser. No. 90,198, Nov. 1, 1979, abandoned, which is a division of Ser. No. 890,339, Mar. 27, 1978, Pat. No. 4,206,958. This application Nov. 12, 1982, Ser. No. 440,913

The portion of the term of this patent subsequent to Jun. 10, 1997, has been disclaimed.

Int. Cl.³ H01R *11/11*

U.S. Cl. 29—882 **2 Claims**

1. A method of making an integral electrical contact at a forward end of an electrical cable, the contact being of the type having a plurality of conductive strands aligned for intermingling mating with a mateable electrical contact having a plurality of aligned conductive strands in close bundled relation and the cable being of the type having a plurality of spirally wound conductive strands surrounded by an insulating sheath, the steps of the method comprising:

removing the insulation from the forwardmost end portion of the electrical cable to expose the plurality of conductive strands therein at the forward end thereof;

mounting a sleeve around the exposed forwardmost end portion of the strands at a location spaced rearwardly from their forward ends and forwardly of the insulation, said mounting maintaining the forwardmost end portion of end of the strands in close bundled relation;

cutting the exposed strands along an acute angle to the cable axis such that each strand end has its end face disposed at an acute angle relative to its axis; and

aligning the exposed spirally wound conductive strands so that their axes are parallel and their ends define a plane substantially perpendicular to the cable axis, the strand ends being radially spreadable for intermingling mating with the aligned strands of said mateable electrical contact;

whereby the sleeve and forwardmost end portion of said conductive strands provide the cable with an integral electrical contact for mating with the aligned strands of said mateable electrical contact.

4,417,396

METHOD FOR MANUFACTURING INTEGRATED CIRCUIT CONNECTORS

J. Preston Ammon; Harry R. Weaver, both of Dallas, and Evan J. Evans, Plano, all of Tex., assignors to Elfab Corporation, Dallas, Tex.

Filed Nov. 2, 1981, Ser. No. 316,998

Int. Cl.³ H01R *43/00*

U.S. Cl. 29—884 **18 Claims**

10. A method of assembling integrated circuit connectors of the type having contacts secured within an insulator, said contacts having an upper socket portion for receiving an integrated circuit lead and a lower tail portion depending from said insulator said method comprising the steps of:

providing a generally horizontal surface having a plurality of generally parallel channels formed longitudinally hereacross;

providing a plurality of integrated circuit contacts equally spaced along a plurality of carrier strips, said contacts having tails extending transversely away from the carrier strips;

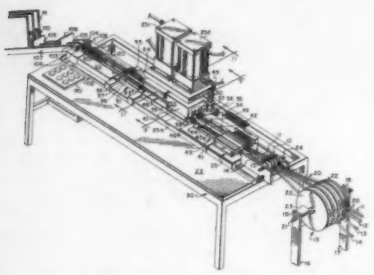
providing an array of integrated circuit connector insulators

having contact receiving apertures formed in linear rows therein, said apertures being spaced from one another a distance equal to the spacing of the contacts upon said carrier strips;

providing an advancing mechanism upon said generally horizontal surface for engaging said carrier strips and advancing the contacts in intermittent movement a predefined, longitudinal distance thereupon;

mounting the insulator array upon said contacts of said carrier strip by inserting the contact tails into the apetures in the insulators;

advancing said carrier strips and said insulator array secured thereto upon said surface;



pressing said insulators upon said contacts of said carrier strip to cause interference engagement between said contacts and said insulators and the rigid mounting of the contacts therein;

advancing said carrier strips and said insulator array secured thereto upon said surface;

separating individual insulators of said array one from the other upon said carrier strips and providing individual integrated circuit connector assemblies;

advancing said connector assemblies upon said surface; and

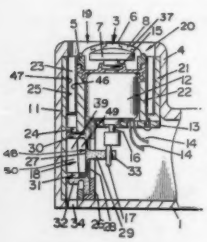
separating said connector assemblies from said carrier strips to provide individual integrated circuit connectors.

4,417,397

ELECTRIC SHAVER

Masami Kitamura, Osaka, Japan, assignor to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed Jun. 4, 1982, Ser. No. 384,981
Claims priority, application Japan, Jun. 15, 1981, 56-92711
Int. Cl.³ B26B *19/44*
U.S. Cl. 30—34.2 **16 Claims**



1. In an electric shaver comprising a housing with a powered shaving head for severing whiskers, the improvement comprising:

(a) a raised area in the housing surrounding the shaving head to form a channel around the shaving head; and

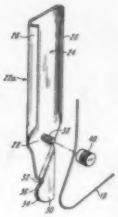
(b) powered suction pump means disposed in said housing and communicating with said channel for creating a sucking force within said channel when the shaver is positioned against the skin for shaving to draw the skin into said channel such that the skin is stretched across and against the shaving head.

4,417,398

TOOL FOR HANDLING WIRE

Mark A. Steck, Miamisburg, Ohio, assignor to Steck Manufacturing Co., Inc., Dayton, Ohio

Filed May 4, 1981, Ser. No. 260,062
Int. Cl.³ B25B *27/14*
U.S. Cl. 30—116 **4 Claims**



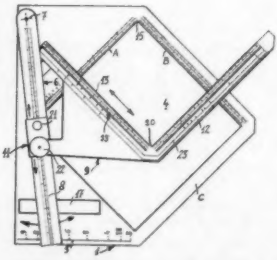
1. A wire handling tool comprising a handle, means on said handle for anchoring a wire to said handle, guide blade means projecting from one end of said handle, said guide blade means having a wall portion for supporting a wire extending outwardly of said handle from said anchor means, said wall portion having a groove extending therealong for cradling said wire, and including shelf means disposed between said anchor means and said blade means for guiding a wire anchored by said anchor means into said groove, and wherein said blade means is one piece with said shelf means, the major surfaces of said blade means being parallel to but spaced from the major surfaces of said shelf means.

4,417,399

DEVICE FOR THE CALCULATION OF THE CHARACTERISTICS OF RECTILINEAR GEOMETRIC SHAPES

Mardick Baliozian, Feucherolles, France, assignor to Tekno AG, Zurich, Switzerland

Filed Mar. 30, 1982, Ser. No. 363,434
Claims priority, application France, Apr. 3, 1981, 81 06732
Int. Cl.³ B43L *7/00*
U.S. Cl. 33—448 **6 Claims**



1. Device for the calculation of the characteristics of rectilinear geometric shapes comprising:

(a) a plate having two perpendicular adjacent edges in which there is formed a rectilinear aperture and which carries at least one graduation indicating a series of ratios between the sides of corresponding rectangles,

(b) a ruler mounted pivotably at one of its extremities on the

plate and the length of which is at least equal to the diagonal of the aperture formed in the plate, the extremity of this ruler being able to intersect the ratio graduation, and

(c) an element mounted rotatably on a slider capable of movement on the ruler, and provided with two perpendicular arms having lengths equal to those of the sides of the aperture of the plate,

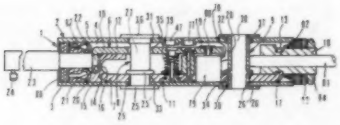
(d) at least two sides of the aperture of the plate, the arms of the pivoting element and the ruler being graduated in length.

4,417,400

GAUGE FOR CHECKING LINEAR DIMENSIONS OF MECHANICAL PIECES

Carlo Dall'Aglio, Volta Reno di Argelato, Italy, assignor to Finike Italiana Marposs S.p.A., S. Marino di Bentivoglio, Italy

Filed Jul. 16, 1981, Ser. No. 283,876
Claims priority, application Italy, Jul. 22, 1980, 3478 A/80
Int. Cl.³ G01B 7/02
U.S. Cl. 33—172 E **10 Claims**



1. A gauge for the dimensional checking of mechanical pieces, comprising: support means including an outer support casing and an elongated support element arranged in a longitudinal direction within the casing, the support element being fastened to the casing and defining a longitudinal axis; a gauging arm connected to the support element for rotational measurement displacements, substantially about an axis perpendicular to said longitudinal axis; detection means having elements coupled to the support element and the gauging arm for detecting the position of the gauging arm; and limiting means for limiting in an adjustable way the displacements of the gauging arm, said limiting means including a member fixed to the support element and having an abutment surface adapted to abut against a first zone of the gauging arm to limit displacements along a first direction and an adjustable element fixed to the member for adjustment in a direction substantially perpendicular to the longitudinal axis and to said axis perpendicular to the longitudinal axis, this adjustable element having an abutment surface adapted to cooperate with a second zone of the gauging arm opposite to the first zone, in order to limit the gauging arm displacements in the opposite direction with respect to the first.

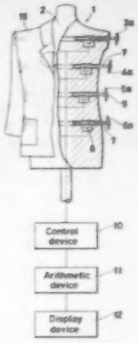
4,417,401

GARMENT MEASURING DEVICE

Noboru Aisaka; Shigeru Nishikawa, both of Ibaraki; Atsuo Shibuya, Tokyo; Yasuo Bessho, Ibaraki; Hitoshi Akami, Ibaraki, and Shigeo Ogawa, Yatabemachi, all of Japan, assignors to Agency of Industrial Science & Technology and Ministry of International Trade & Industry, both of Tokyo, Japan

Filed Mar. 30, 1982, Ser. No. 363,543
Claims priority, application Japan, Mar. 31, 1981, 56-48830
Int. Cl.³ G01B 5/20
U.S. Cl. 33—175 **4 Claims**

1. A device for the measurement of a garment, which comprises a standard body resembling a human body, a plurality of contact pieces provided at stated positions of said standard body, said contact pieces being formed in shapes conforming to the corresponding portions of the contour of the human body, means for protruding said contact pieces from said positions, and sensor means provided on said contact pieces and



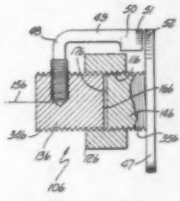
used for detecting contact pressure exerted by the garment on said contact pieces.

4,417,402

GAUGING OF THREAD DIAMETERS

Mark Hattan, Orange, Calif., assignor to William P. Green, Pasadena, Calif., a part interest

Filed Nov. 5, 1981, Ser. No. 318,557
Int. Cl.³ G01B 3/48, 5/12
U.S. Cl. 33—199 R **2 Claims**



2. A gauge for measuring an internal thread formed within a passage in a member, comprising:

first and second gauge elements which have similar external threads adapted to project into said passage along an axis from opposite ends of the passage and engage different portions of said internal thread;

said gauge elements being free for rotation about said axis relative to one another and being retained against axial movement relative to one another beyond a predetermined relative axial position;

said first gauge element having an indicator portion carried thereby at a first end of said passage;

said second gauge element having an indicator portion carried thereby at the second end of said passage;

said indicator portions extending externally of said passage to locations at which the rotary setting of one can be read against the rotary setting of the other, as a measurement of the size of the internal thread.

4,417,403

BOW SIGHT

Ronald L. Strange, Rte. 1, Box 752, Elizabethtown, Ky. 42701

Filed Apr. 5, 1983, Ser. No. 482,230
Int. Cl.³ F41G 1/00, 1/46
U.S. Cl. 33—265 **8 Claims**

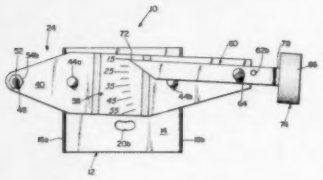
1. An adjustable sight for aiming an archery bow at a target where said bow is disposed in a vertical plane, comprising:

a bow bracket which is attached to the bow above an arrow rest;

an elongate planar sight bracket disposed in a plane generally parallel to the vertical plane of the bow, said sight bracket being attached to said bow bracket;

a first sight mounted at one end of said sight bracket, said first sight extending perpendicularly away from said planar sight bracket;

an elongate distance member disposed generally parallel and adjacent to said sight bracket, said distance member including a distance pivot means located adjacent the other end of said sight bracket for pivotally mounting said distance member to said sight bracket about a horizontal axis perpendicular to the plane of said sight bracket;



a second sight mounted to said distance member, said second sight extending horizontally away from said distance member and aligning with said first sight to define an aimed line of sight at the target;

a distance member holding means for preventing free rotation of said distance member relative to said sight bracket about said distance pivot means;

range indicia located on one of said sight bracket or said distance member; and

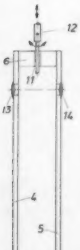
a reference mark located on the other of said sight bracket or said distance member and adjacent said range indicia whereby the aimed line of sight is adjusted for distance of the target from the bow by pivoting said distance member relative to said sight bracket about said distance pivot means to bring said reference mark in alignment with an appropriate range indicia.

4,417,404

METHOD AND APPARATUS FOR MEASURING DISTANCES

Reiner Doberschütz, Kolpingstrasse 7, 5462 Bad Hönningen, Fed. Rep. of Germany

Filed Jul. 27, 1981, Ser. No. 286,824
Int. Cl.³ G01C *21/00*
U.S. Cl. 33—277 **8 Claims**



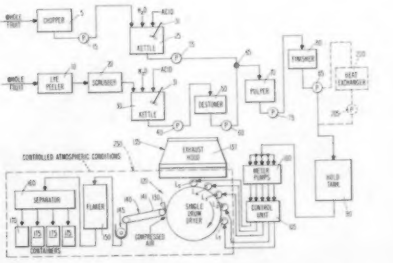
1. A device for measuring the distance of an object from an observer comprising a first transparent plate having a reference line and a sequence of scale lines parallel to and spaced below or above said reference line so that when said reference line is aligned in a first line of sight between the observer's eye and an observed skyline or other reference point at or beyond the distant object, when another observed point at the bottom of the distant object lies in a second line of sight through one of said scale lines, and when said first plate is parallel to an imaginery straight line connecting said observed points at the distant object such that said first and second lines of sight are cut into proportional segments by the plane of said first plate and said imaginery line, then the separation between said scale line and said reference line is inversely proportional to the distance from the observer's eye to the distant object and proportional to the distance between said two observed points along said imaginery line, said imaginary line distance and the distance from the observer's eye to said first plate each being of a predetermined value; means for vertically adjusting said first plate so as to move said reference line to the height of the observer's eye and into alignment with said first line of sight; indicia marking said scale lines with values of various distances from the observer's eye to a distant object corresponding to the separations of said scale lines from said reference line; and a second transparent plate parallel to said first plate and having at least a reference line arranged relative to the reference line of said first plate such that when said reference lines are superimposed in the observer's line of sight the planes of said first and second plates are perpendicular to said first line of sight.

4,417,405

ARTICLE OF MANUFACTURE AND PROCESS

John F. Fuller, Jr., Verona, Pa., assignor to H. J. Heinz Company, Pittsburgh, Pa.

Filed Aug. 22, 1980, Ser. No. 180,470
Int. Cl.³ F26B *3/24*
U.S. Cl. 34—39 **28 Claims**



1. The process for drum drying a fruit puree on a drum dryer, which comprises the steps of:

(a) applying said fruit puree at a rate of at least about 1.2 gal/ft^2 hr to said drum dryer forming a film in a controlled environment of cooling-dehumidified air;

(b) drum drying said puree in said controlled environment of cooling-dehumidified air to form a drum dried product; and

(c) flaking said drum dried product whereby the resultant flaked product has a moisture content of not more than about 1% and said flaked product is readily reconstitutible to natural consistency.

4,417,406

ARRANGEMENT FOR DRYING PLATE-SHAPED WOOD PRODUCTS

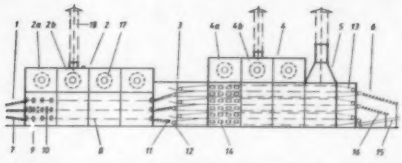
Peter Eibich, Bad Hersfeld, Fed. Rep. of Germany, assignor to Babcock-BSH Aktiengesellschaft, Krefeld, Fed. Rep. of Germany

Filed Aug. 3, 1981, Ser. No. 290,793

Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030272

Int. Cl.³ F26B *13/04*

U.S. Cl. 34—155 **6 Claims**



1. In an arrangement for drying plate-shaped wood products, especially veneers and plywood plies, in a continuous operation during their passage in a predetermined path through the drying arrangement, a combination comprising means for advancing the products in an upstream drying portion of the path, including a roller conveyor which has a plurality of pairs of rollers arranged so that the rollers of each pair confine the respective wood product between themselves during advancement; first drying means for partially drying the respective product in the upstream drying portion of the path to a moisture content less than that at which cracking of the product would occur; means for advancing the wood products in a downstream drying portion of the path, including a belt conveyor which has at least one pair of conveyor belts having a support conveyor belt and a cover conveyor belt confining the respective wood product between themselves during advancement so as to allow for shrinkage of said product; and second drying means for finishing the drying of the respective product in the downstream drying portion of the path, so that the respective wood products is smoothened during drying both in the upstream drying portion and in the downstream drying portion of the path.

4,417,407

FOOTWEAR

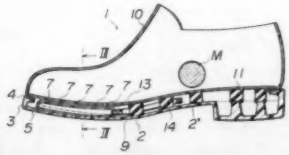
Sadao Fukuoka, Tokushima, Japan, assignor to Fukuoka Kagaku Kogyo, Tokushima, Japan

Filed Mar. 11, 1982, Ser. No. 356,953

Claims priority, application Japan, Mar. 31, 1981, 51-45751[U]; Mar. 31, 1981, 51-45752[U]; Jun. 10, 1981, 51-84180[U]

Int. Cl.³ A43B *7/06, 7/08, 13/20*

U.S. Cl. 36—3 B **14 Claims**



1. A shoe comprising an inner sole, an outer sole, said inner sole and outer sole delimiting a hollow portion having a marginal area of a predetermined height, hollow pumping means disposed along the marginal area of said hollow portion for drawing in and expelling air, first air flow-though means provided on said pumping means for communicating the interior and exterior of said pumping means, and second air flow-through means provided on said inner sole for communicating said hollow portion with the interior of the shoe, the compression and relaxation of said pumping means upon the application and removal of the wearer's weight causing the circulation of air particularly along the marginal area of said hollow portion between said inner sole and outer sole.

4,417,408

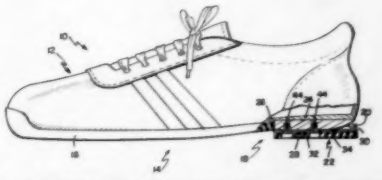
ADJUSTABLE MECHANICALLY CUSHIONED HEEL FOR A SHOE

Robert D. Metro, 848 Roxbury La., Noblesville, Ind. 46060

Filed Oct. 21, 1981, Ser. No. 313,454

Int. Cl.³ A43B *21/36, 21/47*

U.S. Cl. 36—36 R **7 Claims**



7. In a shoe including an upper portion and a lower portion having a sole and a heel area, the improvement comprising a generally planar spring element for cushioning the heel area, the heel area including means providing a fulcrum for flexion of the spring element, means for coupling the spring element to the heel area so that a portion of the spring element extends beyond the fulcrum to cushion the heel area, and adjustment means for varying the length of the portion of the spring element which extends beyond the fulcrum to alter the spring constant and vary the cushioning effect thereof.

4,417,409

NEEDLEWORK FRAME FOR HANDWORK

Lydia A. Bell, 363 Mayflower Blvd., Columbus, Ohio 43213

Filed Oct. 30, 1981, Ser. No. 316,950

Int. Cl.³ D06C *3/08*

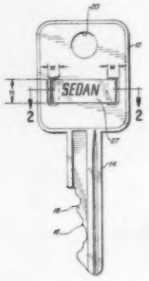
U.S. Cl. 38—102.91 **6 Claims**

1. An apparatus to support a canvas as a strand is stitched into the canvas, which comprises:

a lap-sized rack unit having a substantially flat base, and a frame portion that is inclined relative to the base, the top part of the frame portion being bent downward toward the base, the side profile of the inclined frame portion, the downward bend portion, and the base being in the general shape

of a triangle, the frame portion having a substantially open area therein located at the top of the frame portion; and means for securely mounting the canvas over the rack unit so that the strand can be stitched into the canvas over the substantially open area while the rack unit holds the canvas in place.

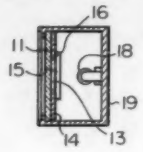
4,417,410
INDICIA MEANS FOR KEYS
John Freedom, 17100 S. Harlem Ave., Tinley Park, Ill. 60477
Filed Oct. 23, 1981, Ser. No. 314,098
Int. Cl.³ G09F *3/00*
U.S. Cl. 40—330 **17 Claims**



1. Key identifying means comprising
an identifying tag having a surface area compatible with receiving for display identifying indicia,
the identifying tag being substantially rectangular and having opposite ends with latching means on one of the ends, and latch receiving means on the other end thereof,
the latching means being located adjacent one of the shortest sides of the tag and the latch receiving means being located adjacent the other shortest side of the tag,
the latching means projecting at a substantially 90° angle relative to the surface area of the key, and being formed by a barbed member,
the latch receiving means comprising a complementary barb retaining member,
one of the opposite ends being dimensioned to be received by and passed through at least two receiving holes in a key, whereby when the latching means is engaged with the latch receiving means the identifying tag is securely retained to the key.

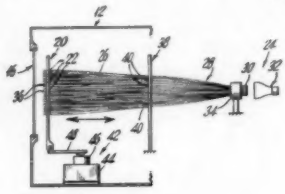
4,417,411
INFORMATION DISPLAY DEVICE
Naoki Miyagishima, Yokohama, and Shigeru Nakagawa, Fujisawa, both of Japan, assignors to Marui Industry Co., Ltd., Japan
Filed Nov. 24, 1981, Ser. No. 324,634
Claims priority, application Japan, Nov. 29, 1980, 55-167380
Int. Cl.³ G09F *13/00*
U.S. Cl. 40—443 **8 Claims**

3. An information display device comprising:
(1) a plate made of a transparent material and having the following layers on the rear surface thereof:
(a) an undercoating of transparent organic based paint, said undercoating containing a flatting agent,
(b) a metal coating on said undercoating and
(c) a transparent protective coating on said metal coating,
(2) an image provided behind said protective coating, and
(3) a light source behind said image, said light source being strong enough to make said image visible when viewed from the front of said plate when said light is activated,



and visible from the front of said plate when said light is not activated.

4,417,412
FIBER OPTIC DISPLAY DEVICE
William L. Sansom, 103 W. 27th St., New York, N.Y. 10001
Filed Aug. 6, 1981, Ser. No. 290,424
Int. Cl.³ G09F *13/00*
U.S. Cl. 40—547 **6 Claims**



1. A fiber optic display device comprising:
(a) a plurality of flexible elongated optical fiber elements each of said optical fiber elements having a light receiving end and a light emitting end;
(b) a source of illumination constructed and arranged to illuminate said light receiving ends of said optical fiber elements; and
(c) image forming means constructed and arranged to place said light emitting ends of said optical fiber elements into two or more image displays including:
(i) a moveable panel member provided with a plurality of apertures therethrough, said apertures being in a pattern substantially corresponding to a first image to be displayed said optical fibers freely passing through said aperatures; and
(ii) displacement means constructed and arranged to move said panel member between a first position proximate the light emitting ends of said optical fiber elements whereby said light emitting ends of said optical fiber elements conform substantially to the pattern of said aperatures in said panel and a second position wherein said panel members is spaced from said light emitting ends in the direction of said light receiving ends whereby said light emitting ends of said flexible optical fiber elements, conform to a second image pattern.

4,417,413

IDENTIFICATION CARD WITH IC CHIP AND A METHOD FOR MANUFACTURING THE SAME

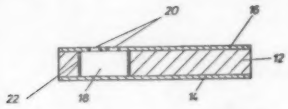
Joachim Hoppe, and Yahya Haghiri-Tehrani, both of Munich, Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 148,612, May 12, 1980, abandoned. This application Nov. 29, 1982, Ser. No. 444,964

Claims priority, application Fed. Rep. of Germany, May 17, 1979, 2920012

Int. Cl.³ G06K 7/06, 19/00

U.S. Cl. 40—630 11 Claims



1. An identification card comprising a flexible substrate; an IC module for the processing of electrical signals; a separate carrier element to which said IC module is attached; contact surfaces located on said carrier element for engaging electrodes exteriorly disposed of said card; leads interconnecting said IC module and said contact surfaces; said substrate having a window for reception of said carrier element; said carrier element being substantially as thick as said identification card and completely surrounding said IC module; said window being slightly larger than said carrier element whereby a gap surrounds the periphery of said carrier element; resilient means for supporting said carrier element in said window and bridging such gap; said resilient means effecting bonds supporting said carrier element in said window which bonds remain unbroken during flexing of said card in the normal course of card use; said carrier element having greater resistance to bending than said card portions surrounding said carrier element, whereby said carrier element may extend beyond a surface of said card when the card portions surrounding said carrier element are flexed into a nonplanar configuration.

4,417,414

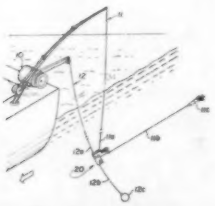
FISHING LINE RELEASE MECHANISM

Robert A. Hood, 23265 Lago Mar Cir., Boca Raton, Fla. 33432, and Peter Lindgren, 4491 Crystal Lake Dr., Pompano Beach, Fla. 33064

Filed Feb. 19, 1981, Ser. No. 236,123

Int. Cl.³ A01K 91/06

U.S. Cl. 43—43.12 6 Claims



1. A fishing line release mechanism comprising support means, first clip means, first tensioning means, second clip means, second tensioning means and connection means; said first clip means being held by said first tensioning means so as to engage a first fishing line segment; said second clip means being held by said second tensioning means so as to engage a second fishing line segment; said clip means and said connection means being so connected that disengagement of either said clip means from its said line segment results in disengagement of said other clip means from its said line segment so that said entire fishing line is free of said mechanism.

4,417,415

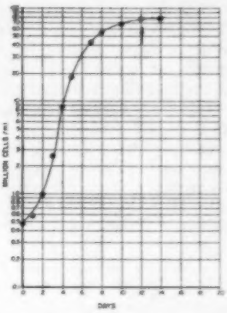
PROCESS FOR CULTURING A MICROALGA, AND EXTRACTING A POLYSACCHARIDE THEREFROM

Gerry R. Cysewski, Snoqualmie, and Daniel B. Anderson, Pasco, both of Wash., assignors to Battelle Development Corporation, Columbus, Ohio

Filed Apr. 26, 1982, Ser. No. 371,868

Int. Cl.³ A01G 7/00

U.S. Cl. 47—1.4 38 Claims



16. A process for culturing *Porphyridium cruentum* which comprises:

(a) establishing a growth medium comprising seawater having added thereto sufficient soluble nitrate and phosphate to make the solution at least about 0.015 M in nitrate and 0.0012 M in phosphate, said growth medium having a pH in the range of about 7.3 to about 8.3;

(b) adding to said growth an inoculum of *P. cruentum* sufficient to provide an initial cell concentration of at least about 100,000 cells/ml. of said growth medium; and

(c) culturing said inoculated growth medium at a temperature in the range of about 18° to about 24° C. and in the presence of light while passing through said medium an oxygen-containing gas containing a minor proportion of carbon dioxide.

4,417,416

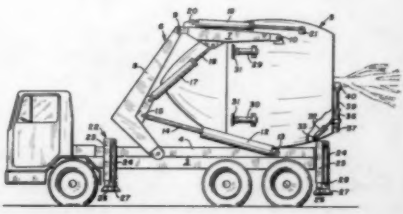
TREE TRANSPLANTING MACHINE

Clifton E. Johnson, Red Lake Falls, N. Mex., assignor to Halla Nursery, Inc., Chaska, Minn.

Filed Jul. 21, 1982, Ser. No. 383,546

Int. Cl.³ A01G 13/00

U.S. Cl. 37—2 R 6 Claims



1. A tree transplating machine comprising in combination:

(a) a truck-type vehicle having a wheel supported frame defining a truck bed;

(b) a tree digging pod having a plurality of spade members reciprocally movable with respect to a toroidal, tree-encircling stand, the spade members being shaped and positioned relative to one another such that when extended relative to such stand, they encase a volume of earth, said pod being positionable between a first disposition wherein said pod is at least partially disposed in the ground and a second disposition on said truck bed;

(c) articulated arm members having first and second segments pivotally coupled together, said first segment being pivotally attached at one end thereof to said frame on opposed sides of said vehicle, said second segment being pivotally attached to said pod at the other end thereof;

(d) first linear motor means coupled between said frame and said articulated arm members for rotating said arm members relative to said frame;

(e) second linear motor means coupled between said articulated arm members and said pod for controlling the rotation of said pod relative to said arm members; and

(f) third linear motor means coupled between said first and second segments of said articulated arm members, or rotating said pod substantially 90° with the upper end of said pod oriented rearward relative to said truck frame following activation of said first and second linear motor means by which said pod is elevated substantially vertically a predetermined distance above ground level.

4,417,417

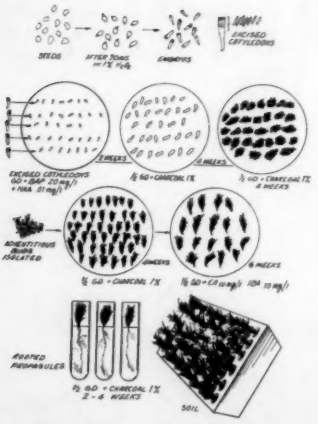
CLONAL PROPAGATION OF GYMNOSPERMS

Asha Mehra-Palta, Monsey, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Oct. 1, 1981, Ser. No. 307,635

Int. Cl.³ A01G *1/00*

U.S. Cl. 47—58 **22 Claims**


SEEDS
AFTER SOAKS IN 1% H2O2
EMBRYOS
EXCISED COTYLEDONS
EXCISED COTYLEDONS 60 + BAP 22 mg/l + NAA 21 mg/l
2 WEEKS
½ GO + CHARCOAL 1%
4 WEEKS
½ GO + CHARCOAL 1% 4 WEEKS
ADVENTITIOUS BUDS ISOLATED
CALLUS
½ GO + CHARCOAL 1%
½ GO + CA 10 mg/l IBA 10 mg/l
ROOTED PROPAGULES
½ GO + CHARCOAL 1% 2 - 4 WEEKS
SOIL

1. A method of inducing formation of adventitious buds on excised gymnosperm tissue comprising pulse treating said tissue on a nutrient medium containing at least about 10 mg/L of a cytokinin for a time sufficient to induce formation of adventitious buds on said tissue, and then transferring the pulse treated tissue to a nutrient medium free of exogenous growth factors.

4,417,418

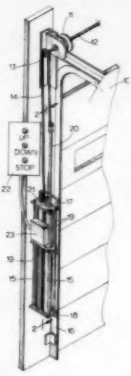
AIR POWERED DOOR OPERATOR

Norman E. Warning, 5408 Williams St., White Bear Lake, Minn. 55110

Filed Feb. 12, 1982, Ser. No. 348,185

Int. Cl.³ E05F *11/00*

U.S. Cl. 49—199 **4 Claims**



1. In a system for operating an overhead door in which the door is raised and lowered by operation of a torsion bar rotated by a chain-driven sprocket, an air-powered operator for driving said chain, comprising:

(a) a pair of air cylinders, each having an internal piston member and an outward extending elongated rod attached at one end to the piston member;

(b) means for attaching the other end of each of said rods to an opposite end of said sprocket chain;

(c) valve means for selectively feeding pressurized air into one end of one of said cylinders to drive the piston toward the other end of the cylinder to raise or lower the door;

(d) an air bleeder opening to atmosphere in each cylinder through the cylinder wall near its other end, said bleeder opening being closed off by the piston when the piston reaches it; and

(e) an adjustable needle valve opening to atmosphere in said other end of each cylinder.

4,417,419

WINDOW ASSEMBLY FOR AUTOMOTIVE VEHICLES

Egbert Rossie, Ingolstadt; Michael Hahn, Kösching, and Lutz Schemperg, Kipfenberg, all of Fed. Rep. of Germany, assignors to Audi NSU Auto Union AG, Neckarsulm, Fed. Rep. of Germany

Filed Jun. 13, 1980, Ser. No. 159,398

Claims priority, application Fed. Rep. of Germany, Jun. 14, 1979, 2924309

Int. Cl.³ E05F *11/48*

U.S. Cl. 49—348 **10 Claims**

1. A window assembly for an automotive vehicle having a body, comprising:

a window pane adapted to be raised and lowered into said body and having at least one substantially vertical edge and a substantially horizontal top edge;

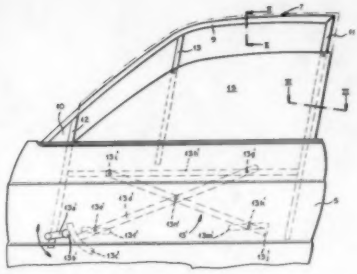
a substantially vertical guide rail mounted on said body and disposed along said vertical edge;

at least one guide member directly fixed to said pane along a face thereof turned toward the interior of said vehicle and disposed inwardly of said vertical edge, whereby a continuous zone on said face and along said vertical edge outwardly of said guide member is formed without obstruction, said guide member being at least partially surrounded

by said rail and slidably mounted therein for vertical reciprocation;

first sealing means including a first elongate seal on said body for directly engaging said zone of said face at least in a closed state of the window assembly;

second sealing means including a second elongate seal extending horizontally on said body for engaging said pane



along said top edge in said closed state, said second sealing means including a guide surface extending below and parallel to said second elongate seal and facing toward the exterior of said vehicle for directing said pane toward a position of engagement with said second elongate seal upon an upward stroke of said pane; and

actuating means on said body for raising and lowering said pane with said guide member guided by said rail.

4,417,420

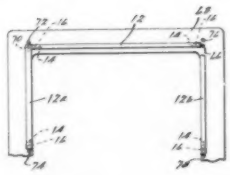
DOOR SEAL

Richard B. Marsh, Grosse Pointe Farms, Mich., assignor to Marsh Industries, Inc., Mt. Clemens, Mich.

Filed Feb. 11, 1981, Ser. No. 233,383

Int. Cl.³ F24C *15/02*

U.S. Cl. 49—482 **15 Claims**



1. In combination with a door having a surface and having at least two spaced apart apertures along said surface, an improved door seal comprising

means for sealing said door,

retainer hook means, including a body portion and a hook portion, and

eyelet means for securing said retainer hook means to said sealing means, said sealing means including sealing flange means substantially isolating said door surface from direct contact with said eyelet means,

wherein said sealing means is secured to said door by said retainer hook means at said apertures.

4,417,421

APPARATUS FOR POLISHING INTERIOR SURFACES OF PIPES OR THE LIKE

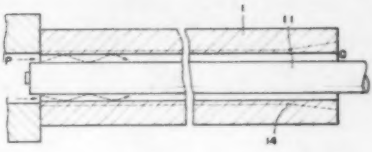
Kazuo Akagi; Akihiro Fukuda, and Tomio Saito, all of Shimonoseki, Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Oct. 1, 1981, Ser. No. 307,673

Claims priority, application Japan, Aug. 28, 1981, 56-135854

Int. Cl.³ B24C *3/16*

U.S. Cl. 51—16 **3 Claims**



1. A pipe polishing apparatus comprising:

a polisher pipe extractably inserted into a pipe to be polished; and

means for injecting polishing grains into a gap formed between the polisher rod and pipe and for simultaneously rotating the polisher rod and pipe in opposite directions to thereby polish the interior surface of said pipe, wherein said polisher rod has an outside diameter which is progressively reduced in the direction of polishing grain injection.

4,417,422

GRINDING MACHINE

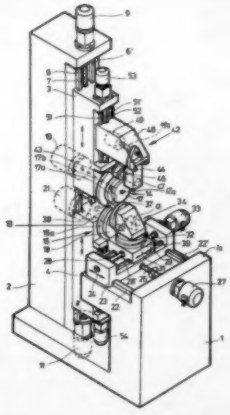
Werner Redeker, Escheburg, and Uwe Uhlig, Hamburg, both of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Feb. 6, 1981, Ser. No. 232,250

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1980, 3005606

Int. Cl.³ B24B *19/14, 41/06*

U.S. Cl. 51—50 R **43 Claims**



1. In a grinding machine, particularly in a numerically controllable machine for surface grinding of complex workpieces, such as turbine blades, the combination of at least one grinding tool including a rotary grinding spindle having an outer end portion and a plurality of coaxial grinding wheels on said spindle, said wheels including a smaller-diameter wheel nearer to and a larger-diameter wheel more distant from said outer

end portion; means for rotating said spindle; means for dressing said wheels; a table; work holding means movably mounted on said table and including a support; a work holder movably mounted on said support; means for rotating said support relative to said table about an axis which is normal to the axis of said spindle; means for rotating said work holder relative to said support about an axis which is parallel, at least at times, to the axis of said spindle; and at least one work gripping device mounted on said work holder.

4,417,423

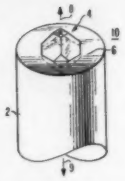
STYLUS MANUFACTURING METHOD

Eric F. Cave, and James J. Cowden, both of Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Oct. 13, 1981, Ser. No. 310,857

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—283 R **10 Claims**



1. A method for forming four faces on a diamond having anisotropic crystallographic hardness during the formation of a tapering tip end comprising the steps of:

orienting the diamond for rotation about the {100} crystallographic direction of the diamond corresponding to the four-fold axis of symmetry of the diamond,

contacting the diamond with an abrasive surface having a loosely-bound charge of abrasive particles while

maintaining relative motion between the diamond and the abrasive surface such that the {100} crystallographic direction is at an acute angle with the abrasive surface; and

isotropically coning the diamond by continuously rotating the diamond and applying a force between the diamond and the abrasive surface which allows four faces to be formed in the diamond because of its anisotropic crystallographic hardness, the form of the diamond thereby being a symmetric four-faced square pyramid.

4,417,424

SEGMENTED EXTENDIBLE BOOM

Darwin J. Jacobson, P.O. Box 962, Port Angeles, Wash. 98362

Continuation of Ser. No. 110,173, Jan. 7, 1980, abandoned. This application Jun. 21, 1982, Ser. No. 390,639

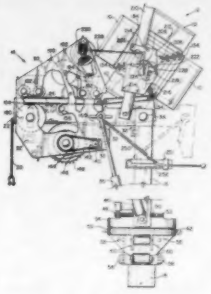
Int. Cl.² E04H *12/00*

U.S. Cl. 52—108 **20 Claims**

1. A segmented extendible boom comprising:

a plurality of elongated, trough-like segments having truncated, V-shaped, transverse cross-sections of uniform size, each segment having a bottom and a pair of diverging sidewalls, the sidewalls projecting upwardly and outwardly from spaced-apart locations on the bottom to form the truncated, V-shaped cross-sections, each segment having an open end opposite the bottom, each segment having a longitudinal end at each longitudinally distant portion of the segment, the segments being connected longitudinal end to longitudinal end such that the open ends of the segment face in the same direction, the segments being aligned longitudinally to form a projecting boom arm when the boom is extended, the segments being progressively shorter in longitudinal length from the outer end to the inner end of the projecting boom arm, means pivotally interconnecting each segment to the next adjacent segment for pivoting the longitudinal axis of an adjacent segment about a transverse axis located at the abutting longitudinal ends of the segments near the open ends of the segments, thereby permitting segments not needed for the boom arm to be nested about one another with the bottoms of nested segments lying close together;

side flanges extending transversely outwardly from the upper end of the sidewalls opposite the bottom;



flexible tensional means fixedly interconnected to each of the side flanges for providing structural support to the boom segments for resisting pivotal downward movement of the segments about the transverse pivot axes when extended;

roller means engaging the side flanges above and below the side flanges for cantilevering the segments in an extended position; and

means for extending and retracting the segments.

4,417,425

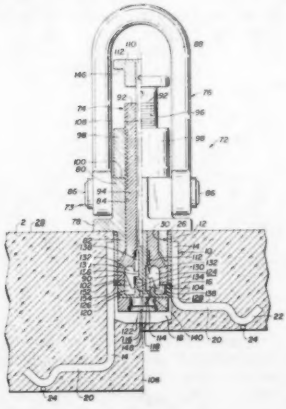
APPARATUS FOR ERECTING CONCRETE WALL PANELS

James E. Case; Richard L. Ruppert, both of Sparks, and Lindley Manning, Reno, all of Nev., assignors to Dayton Superior Corporation, Miamisburg, Ohio

Filed Feb. 11, 1977, Ser. No. 767,880

Int. Cl.³ E04D *15/00*

U.S. Cl. 52—125.5 **25 Claims**



1. Apparatus for the releasable connection to a tubular member embedded in an object, the member defining an opening in the object and including an inwardly facing shoulder disposed interiorly of the opening, the apparatus comprising:

plate means adapted to be placed across the opening and including an aperture for alignment with the opening;

an elongated housing extending through the aperture and having an axial bore,

the inner end of the housing being adapted for positioning in said opening, and including a laterally extending cutout,

a locking lug carried by the housing for lateral movement within the cutout from a first position in which the lug is out of engagement with the shoulder to a second position in which a portion of the lug protrudes laterally from the housing into engagement with the shoulder;

actuating means comprising an elongated plunger slidably disposed in the bore for moving the lug between the first and second positions responsive to movement of the actuating means longitudinally in the bore between corresponding first and second positions;

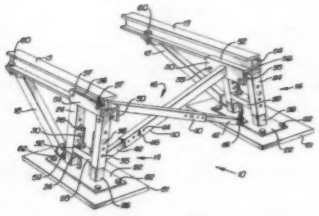
the actuating means including means for positively and mechanically locking the lug in its second position when the actuating means is in its second position; and

a pivoted pawl disposed interiorly of the housing, the pawl having means engaging the lug and means engaging the plunger during plunger movement from its second position to its first position so that such plunger movement is translated into corresponding movement of the lug from its second position to its first position.

4,417,426
SUPPORT SYSTEM

Donald L. Meng, Simi Valley, Calif., assignor to Quakebrace, Inc., Simi Valley, Calif.

Filed Mar. 23, 1981, Ser. No. 246,440
Int. Cl.³ E04D *15/00*
U.S. Cl. 52—126.7 **2 Claims**



1. A foundation support system for structures such as mobile homes, trailers and the like having generally parallel frame members on the underside thereof comprising:

two generally vertical main support members, each having a base disposed at the bottom thereof and means for gripping and supporting one of said frame members on the underside of said structure disposed at the top thereof, each said support member further comprising:

two or more generally vertical tubular legs slideably disposed on an equal number of support legs which extend upwardly from said base, wherein said gripping means is disposed across the top ends of said tubular legs, and a generally horizontal member disposed between said tubular legs, said horizontal member having one or more holes disposed vertically therethrough;

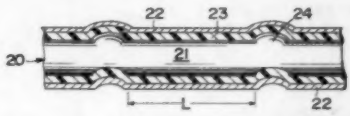
two diagonal cross-braces each having a means at one end thereof configured to be secured to the gripping means disposed at the top of one of said support members, each said cross-brace extending from said base of one of said support members to the gripping means which is disposed at the top of the other support member; and

means for adjusting the height of said support members without removing said structure from said support system said height adjusting means comprising one or more threaded bolts extending upwardly from said base through said holes in said horizontal member and two nuts disposed on each said bolt, one nut being disposed beneath said horizontal member and the other nut being disposed above said horizontal member, said horizontal member being supported by said nuts which are disposed therebelow such that by rotating said nuts, the height at which said horizontal member and thus said tubular members is secured may be adjusted.

4,417,427
METHOD AND APPARATUS FOR DAMPING VIBRATIONS IN LARGE STRUCTURES, SUCH AS BUILDINGS

Oskar Bschorr, Kepplerstr. 11, 8000) Muenchen 80, Fed. Rep. of Germany

Filed Apr. 6, 1981, Ser. No. 251,475
Int. Cl.³ E02D *27/34*
U.S. Cl. 52—167 **20 Claims**

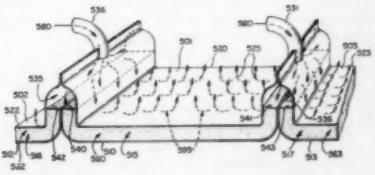


1. A method for damping vibrations in a large structure including poured concrete components, comprising the following steps: covering at least a portion of a metal member with a vibration damping material, and securing the metal member in a force transmitting manner in or to said concrete components in such a manner that vibration causing force components must travel at least partially through said vibration damping material, using as said metal member concrete reinforcing rod means, enveloping said reinforcing rod means with a layer of vibration damping material, encasing the enveloped reinforcing rod means and the vibration damping material in a sheet metal jacket, and embedding the enveloped and encased rod means in the concrete components when the concrete is being poured.

4,417,428
INTEGRAL PURGED MULTI-LAYER INSULATION DESIGN

Calvin L. Wilkinson, Renton, Wash., assignor to Boeing Aerospace Company, Seattle, Wash.

Filed Feb. 19, 1981, Ser. No. 235,853
Int. Cl.³ E04B *1/74*
U.S. Cl. 52—172 **22 Claims**



1. An insulation system for a cryogenic vessel comprising:

a plurality of substantially rectangular, adjacent segments of multi-layer insulation placed on the outer surface of said vessel, said segments comprising a plurality of layers of thin, reflective sheets, separated from each other by spaces through which a purge gas having boiling point below the temperature of said vessel flows, and each of said substantially rectangular segments having two opposing edges referred to as ends, and two other opposing edges referred to as sides, said plurality of segments having

outwardly bent portions including said ends wherein the end surfaces of said bent portions are exposed, said bent por-

tions of adjacent segments also being adjacent and positioned in an abutting relationship;

gas inlet channels for introducing said purge gas into said segments, said gas inlet channels enclosing the exposed end surfaces of some of the abutting end portions of each segment such that one of the ends of each of said segments is covered by one of said gas inlet channels, the top of said gas inlet channels being formed from extensions of the outermost layers of said adjacent segments joined together above abutting end portions enclosed by said inlet channels;

sections of multi-layer insulation forming caps over said abutting end portions including said gas inlet channels, said caps being attached to the outermost layers of said segments and said caps over said end surfaces not enclosed by said gas inlet channels being attached to the outermost layers of said segments to escape from said spaces; and

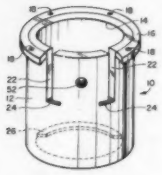
seals at said sides to prevent the flow of purge gas through said sides.

4,417,429

FREESTANDING STAIR ASSEMBLY AND RISER THEREFOR

Hans Stussi, R.R. #1, Cochrane, Alberta, Canada T0L 0W0

Filed Sep. 9, 1981, Ser. No. 300,550
Claims priority, application Canada, Sep. 12, 1980, 360198
Int. Cl.³ E04F *11/00, 19/10*
U.S. Cl. 52—182 **14 Claims**



1. A riser for a freestanding stair assembly comprising a tubular link member having an annular wall portion, tread securing means at one end of said wall portion, and a pair of axially extending parallel slots formed in said wall portion, said slots being open at said one end, being spaced apart circumferentially and being dimensioned to receive the other end of the wall portion of a superjacent riser, wherein said tread securing means comprises a tread securing flange extending outwardly from said annular wall portion, said flange extending circumferentially about said annular wall portion along a major portion thereof between said slots and being provided with fastener receiving means.

4,417,430

DIRECT DRIVE POSITIVE LOCKING PANEL FASTENER

Frank F. Loikitz, Middletown, N.J., assignor to Standard Keil Hardware Manufacturing Co., Allenwood, N.J.

Filed Mar. 13, 1981, Ser. No. 243,327
Int. Cl.³ F16B *2/18*
U.S. Cl. 52—584 **20 Claims**

1. A panel fastener for drawing together and joining a first and second panel at an interface, comprising:

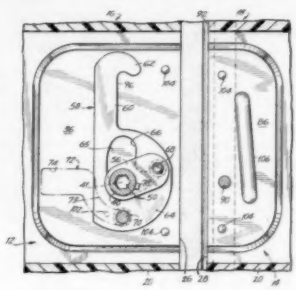
a moving member movably connected to said first panel, said moving member having a length adapted to extend a portion of said moving member across said interface;

a crank shaft and a crank connected for rotation with said crank shaft;

first cam means connected to said crank for rotary motion therewith and first cam follower means for engaging said moving member with said crank, rotation of said crank causing one of direct rotary drive of said moving member and relative motion between said first cam means and said first cam follower means, said moving member moving in a first prescribed motion determined directly by said crank;

a first fixed member connected to said first panel;

second cam means and second cam follower means for engaging said moving member with said first fixed member, motion of said moving member causing relative motion between said second cam and said second cam follower means, said moving member moving in a second



prescribed motion determined in part by said second cam means and the contours of said second cam follower means and in part by said first cam means and the contours of said first cam follower means;

a second fixed member connected to said second panel;

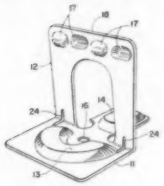
means for releasably engaging said second fixed member with said portion of said moving member when said portion extends across said interface, said extending across said interface being a portion of said first prescribed motion of said moving member.

4,417,431

CLIP FOR RETAINING SHEET METAL ROOFING OR SIDING

Alfred D. Commins, Livermore, and Frederick T. Kindelvich, Orinda, both of Calif., assignors to Zip-Rib, Inc., Burlington, N.J.

Filed Jun. 23, 1980, Ser. No. 162,226
Int. Cl.³ E04C *5/00*
U.S. Cl. 52—715 **6 Claims**



1. A nestable sheet metal clip for retaining sheet metal roofing or siding panels on a structure comprising:

a base portion, said base portion being comprised of first and second sections, said first section being substantially rectangularly shaped, said second section being smaller than said first section and lying in substantially the same plane therewith;

an upright portion substantially perpendicular with said base portion and being integral therewith, said upright portion including a pair of spaced apart legs, the bottom of each of said legs being integrally connected to the first section of said base portion at a point adjacent to the juncture be-

tween said first and second sections but lying laterally to either side of said second section, the top of said legs being connected together by an upper section having a top edge thereby leaving an opening defined by said legs and said top section, said opening being substantially of the same shape but slightly larger than the second section of said base portion;

a plurality of smooth bulbous projections adjacent to but spaced from said top edge of the upper section of said upright portion, whereby the top edge is substantially straight;

the entire clip being comprised of a single piece of sheet metal and having the same thickness throughout which thickness is equal to the thickness of said sheet metal from which the clip is comprised.

4,417,432

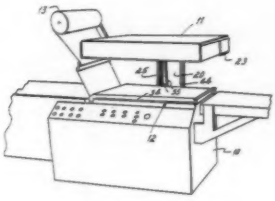
POWER POST FOR FILM FRAME FOR SKIN PACKAGING MACHINE

Cleve L. Lee, Anderson, S.C., assignor to Nordson Corporation, Amherst, Ohio

Continuation-in-part of Ser. No. 252,140, Apr. 8, 1981. This application Jan. 8, 1981, Ser. No. 268,885

Int. Cl.³ B65B *57/00, 53/02*

U.S. Cl. 53—77 **9 Claims**



1. In a skin packaging machine, a single post mount for a film frame comprising,

a base,

a single vertical post mounted at its lower end on said base at the center of one side of said base,

an oven mounted on the upper end of said post,

sprockets mounted at the upper and lower ends of said post, a chain passing around said sprockets,

a vertical shaft mounted between said base and said oven,

a carriage assembly slidably mounted on said shaft, a film frame mounted on said carriage assembly,

said chain being connected to said carriage assembly to raise and lower said film frame as said sprockets are rotated,

a drive motor connected to one of said sprockets,

a one-way clutch interposed between said drive motor and one of said sprockets to permit application of a driving force to said sprocket only to raise said carriage assembly,

and means for preventing rotating of said carriage assembly with respect to said shaft,

said single post leaving substantial area around the machine for access to the machine from front and rear for maintenance and the like.

4,417,433

METHOD OF MAKING INFUSION PACKAGE

Robert M. Mitchell, Norwalk, Conn., assignor to Thomas J. Lipton, Inc., Englewood Cliffs, N.J.

Division of Ser. No. 74,260, Sep. 10, 1979, Pat. No. 4,290,521. This application Apr. 28, 1981, Ser. No. 258,527

Int. Cl.³ B65B *29/04*

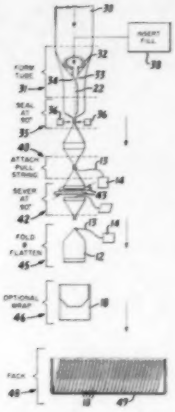
U.S. Cl. 53—413 **6 Claims**

1. A method of making an infusion package including:

(a) forming a generally tetrahedral package of liquid permeable material,

(b) introducing a quantity of fill,

(c) folding the package inwardly to flatten the package after introducing the fill; and



(d) affixing a pull means to the package at a location moved inward by the fold so as to provide unfolding of the fold outward by pulling the pull means.

4,417,434

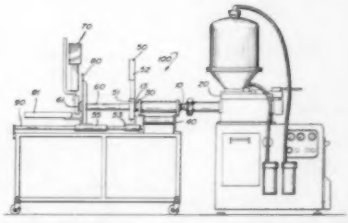
METHODS AND APPARATUS FOR PRODUCING ENCASED MEAT AND MEAT FOR ENCASING

Ludwig Piereder, 153 Windmill Crescent, Pointe Claire, Quebec, Canada H9R 4Y6

Filed Oct. 26, 1981, Ser. No. 314,991

Int. Cl.³ A22C *11/06*

U.S. Cl. 53—469 **19 Claims**



15. A method of producing encased meat or the like comprising the steps of:

(1) feeding meat to be encased under pressure to a first chamber;

(2) continuing to feed meat thereto, under pressure, whereby it applies a force to said fed meat, sufficiently to move a second chamber in a first linear direction telescopically of said first chamber, thereby substantially filling up said first and second chambers with meat;

(3) opening said second chamber to permit discharge of the meat therefrom to a third chamber;

(4) discharging said meat from said second chamber to said third chamber by moving said second chamber in a second and opposite linear direction to said first linear direction;

(5) severing the fed meat at a point intermediate said second and third chambers and reclosing said second chamber;

(6) feeding further meat to be encased under pressure to said

first chamber whereby it applies a force to said fed meat, sufficiently to again move said second chamber telescopically of said first chamber, substantially filling up with meat said first and second chambers;

(7) re-opening said second chamber to permit discharge of the meat therefrom into a casing;

(8) discharging said meat from said second chamber into said casing by moving said second chamber in said second and opposite direction; and

(9) crimping said casing to close said casing over said severed and discharged meat.

4,417,435

APPARATUS FOR AUTOMATICALLY PACKING END CLOSURES FOR CANS IN PAPER BAGS

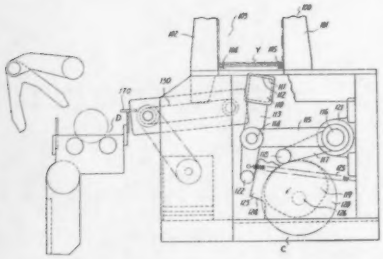
Atsuyuki Wakamatsu, Shimizu, and Haruo Tsuwano, Shizuoka, both of Japan, assignors to Daiwa Can Company, Tokyo, Japan

Continuation of Ser. No. 37,694, May 10, 1979, Pat. No. 4,251,977. This application Nov. 6, 1980, Ser. No. 204,622

Claims priority, application Japan, Feb. 24, 1979, 54-21190

Int. Cl.³ B65B *35/50, 43/30*

U.S. Cl. 53—532 **2 Claims**



1. Apparatus for handling can end closures advanced sequentially to the apparatus comprising:

(a) a structure defining a horizontally-extensive passage having forward and rearward ends;

(b) a pair of rolls;

(c) means for supporting said rolls on parallel, vertically-extensive axes so that a peripheral portion of each of said rolls protrudes into said passage adjacent the rearward end thereof and said rolls define a gap therebetween within said passage;

(d) means for rotating said rolls on said axes so that said peripheral portions move forwardly within said passage;

(e) means for defining a lower suction port open to said passage rearwardly of said rolls adjacent the bottom of said passage and an upper suction port open to said passage in the vicinity of said rolls adjacent the top of said passage;

(f) an inclined chute, the lower end of said chute being disposed adjacent the rearward end of said passage so that each closure slid down said chute will be discharged into said passage in an inclined disposition immediately rearwardly of said rolls, with the lower portion of such closure forward of said lower suction port;

(g) means for applying suction through said ports so that the lower portion of each closure discharged from said chute will be displaced rearwardly, the upper portion of each such closure will be displaced forwardly and each such closure will be pivoted to an upright disposition within said passage and engaged with said rolls, whereby each such closure will be forced forwardly through the gap between said rolls;

(h) a pair of opposed pawls, means for resiliently supporting said pawls so that said pawls protrude into said passage and said pawls define a gap smaller than the diameter of one of the closures to be handled, and means for controllably reciprocating said pawls along said passage between a rearward position in which said pawls are immediately adjacent to said rolls and a forward position in which said pawls are forward of said rolls and remote therefrom, when said pawls are in said rearward position, each closure engaged by said rolls being forced forwardly through the gap defined by said pawls during the engagement of such closure by said rolls and accumulating forwardly of said pawls, said reciprocating means being operative to move said pawls forwardly upon the passage of a preselected lot number of closures through said chute to advance such accumulated lot of closures along said passage; and

(i) means for opening a series of bags, means for loading a lot of closures advanced by said pawls into each such opened bag, and means for closing each such bag after introduction of a lot of closures.

4,417,436

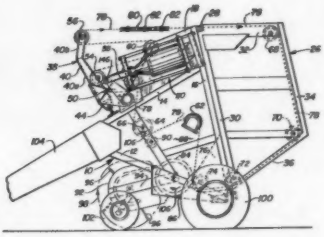
METHOD OF ADJUSTING APRON TENSION IN ROLL BALING MACHINES

Willis R. Campbell, Ephrata, Pa., assignor to Sperry Corporation, New Holland, Pa.

Continuation-in-part of Ser. No. 333,002, Dec. 21, 1981. This application Mar. 25, 1982, Ser. No. 361,687

Int. Cl.³ A01D *39/00;* **B30B** *5/06*

U.S. Cl. 56—341 **3 Claims**



1. In a roll baling machine having apron means defining an expandable bale chamber, said apron means moving from a first position to a second position during formation of a roll bale in said expandable bale chamber, air pressure spring means for maintaining tension in said apron means, said air pressure spring means including an air bag for containing air under pressure and a piston movable into said air bag to increase the air pressure therein, means for picking up crop material and for delivering said crop material to said expandable bale chamber, a method of adjusting the tension in said apron means comprising:

adjusting the air pressure in said air bag to any level within a predetermined range to adjust the density of said roll bale.

4,417,437

WATCHBAND FORMED OF TUBULAR METAL RODS AND METHOD OF MANUFACTURING SAME

Katsuo Museki, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed May 18, 1981, Ser. No. 264,843

Claims priority, application Japan, May 19, 1980, 55-68465[U]

Int. Cl.³ B21L *11/00;* **F16G** *13/18*

U.S. Cl. 59—20 **14 Claims**

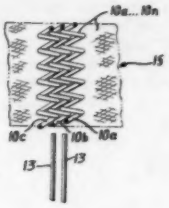
1. A method of manufacturing a watchband comprised of a plurality of interconnected segments comprising the steps of:

providing at least one hollow tubular metal rod;

winding the hollow tubular metal rod on a mandrel into a

generally helical shape, the use of the hollow tubular metal rod enabling the winding step to be satisfactorily carried out without the need for annealing the hollow tubular metal rod either before or after winding thereof into a generally helical shape;

cutting the helically-wound hollow tubular metal rod to predetermined segment lengths; and



connecting together the lengths of helically-wound hollow tubular metal rod so that the coils of one length partly overlie the coils of adjoining lengths to thereby form a watchband comprised of interconnected hollow tubular metal rod segments.

4,417,438

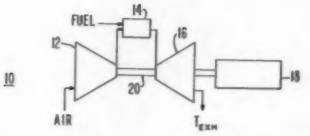
CONTROL SYSTEM FOR CHENG DUAL-FLUID CYCLE ENGINE SYSTEM

Dah Y. Cheng, Los Altos Hills, Calif., assignor to International Power Technology, Inc., Sunnyvale, Calif.

Division of Ser. No. 59,591, Jul. 23, 1979, Pat. No. 4,297,841. This application Jun. 12, 1981, Ser. No. 273,269

Int. Cl.³ F02C 7/00, 7/10

U.S. Cl. 60—39.05 **4 Claims**



1. A method of operating a Cheng parallel compound Brayton/Rankine cycle engine under partial load conditions comprising following a control path defined by the locus of peak efficiency points, where the control path results in a declining turbine inlet temperature as the load decreases, by

(a) controlling the Brayton cycle part of the dual-fluid cycle engine by means of a first control system;

(b) controlling the Rankine cycle part of the dual-fluid cycle engine by means of a second control system; and

(c) setting the desired operating points of said first and second control systems by providing predetermined settings for each of the two control systems for all load conditions, said settings comprising at least fuel flow rates and water flow rates.

4,417,439

STARTING MEANS FOR A GAS TURBINE ENGINE

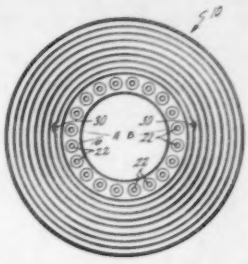
Domingo Sepulveda, Vernon, and Edmund E. Striebel, South Windsor, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Jul. 29, 1981, Ser. No. 287,852

Int. Cl.³ F02C 7/264

U.S. Cl. 60—39.141 **3 Claims**

1. For a gas turbine engine having an annular combustor and a fuel system including a plurality of circumferentially spaced dual fuel nozzles for leading fuel into the combustor, each nozzle having a primary fuel system for continuously flowing fuel to the combustor during the entire engine operating envelope and a secondary fuel system for flowing fuel solely during the higher thrust regimes of the engine operating envelope, at least one igniter in said annular combustor and one of said dual fuel nozzles associated with said igniter to feed a predetermined amount of fuel thereto for starting of said engine, means for asymmetrically distributing a predetermined amount of fuel to each of said fuel nozzles for delivering fuel to the primary fuel system of said dual fuel nozzle associated with said igniter at an amount different than all the other primary fuel systems of all of said other dual fuel nozzles.



4,417,440

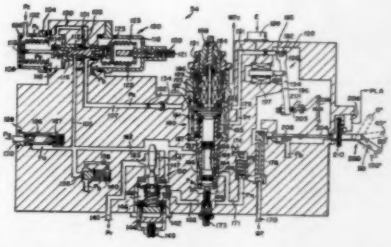
FUEL CONTROL APPARATUS FOR A GAS TURBINE ENGINE

David J. Hawes, Pierrefonds, Canada, assignor to Aviation Electric Ltd., Montreal, Canada

Filed May 12, 1981, Ser. No. 262,867

Int. Cl.³ F02C 9/28

U.S. Cl. 60—39.281 **16 Claims**



1. A backup arrangement for a fuel control apparatus which meters fuel to a gas turbine engine in response to an electrical signal indicative of a desired fuel/air ratio of the engine comprising:

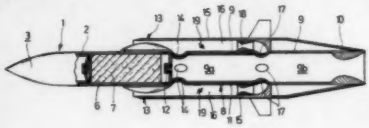
a metering valve, positioned by a hydraulic control pressure, whose position is indicative of the fuel flow therethrough; and

means for modulating the hydraulic control pressure by means of an electrical control and a manual control; said electrical control comprising a means for positioning said modulating means over a predetermined electrical control range, said manual control including means for positioning said modulating means over a predetermined manual control range, wherein said manual control range is related to said electrical control range such that upon failure of the electrical control the modulating means automatically fails to a position controlled by the manual control.

4,417,441
RAM JET ENGINE

Brunhart Crispin; Nobert Voss, both of Taufkirchen; Wulf-Dieter Pohl, Zorneding, and Dieter Thomaier, Munich, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bökow-Blohm Gesellschaft mit beschränkter Haftung, Munich, Fed. Rep. of Germany

Filed Mar. 29, 1979, Ser. No. 27,715
Int. Cl.³ F02K *7/18*
U.S. Cl. 60—251 **7 Claims**

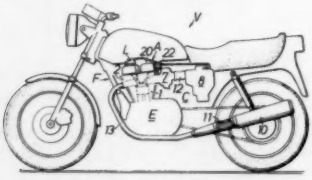


1. Ram jet engine, for operation with fuels including boron and like energy-rich materials of high melting and evaporating temperature in particulate form, comprising an axially elongated tubular combustion chamber having a forward end and a rearward end, a flame chamber located within said combustion chamber and extending from the forward end toward the rearward end and terminating intermediate the forward and rearward ends, a mixing chamber located within said combustion chamber and extending from the end of said flame chamber spaced from the forward end of said combustion chamber toward the rearward end of said combustion chamber, intake diffusers distributed over the outside circumference of said combustion chamber for conducting a ram air supply to the combustion chamber, said intake diffusers arranged to divide the total ram air from the intake diffusers into combustion air for the supply thereof into said flame chamber and into channelled secondary air conveyed through at least certain of said intake diffusers exteriorly of said combustion chamber for the supply thereof inwardly through said combustion chamber wall directly into said mixing chamber spaced from the supply of combustion air into said flame chamber, while maintaining an aerodynamically favorable contour.

4,417,442
EXHAUST GAS CLEANING SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Yasuo Ikenoya, Kawagoe; Makoto Hirano, Asaka; Yoji Shimizu, Wako, and Masaaki Matsuura, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 19, 1981, Ser. No. 275,281
Claims priority, application Japan, Jun. 30, 1980, 55-88948
Int. Cl.³ F01N *3/34*
U.S. Cl. 60—293 **7 Claims**

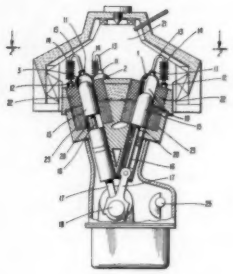


1. An exhaust gas cleaning system for an internal combustion engine comprising a plurality of cylinders with respective cylinder heads, a plurality of sets of exhaust valve ports provided in said cylinder heads, each set opening into a common combustion chamber of each of the cylinders, exhaust passage means in communication with respective exhaust valve ports, exhaust valves for opening and closing the exhaust valve ports, said exhaust passage means comprising a plurality of externally open manifold exhaust ports and a plurality of sets of branch exhaust ports each set of which branch from a related manifold exhaust port and communicate with a related set of exhaust valve ports, and secondary air passage means directly connected to respective branch exhaust ports for supplying secondary air thereto, said secondary air passage means including a passage in each of said cylinder heads composed of a manifold secondary air passage opening externally of the related cylinder head and a set of branch secondary air passages branching from said manifold secondary air passage and communicating with the related set of branch exhaust ports, each of said exhaust valves extending into a respective one of said branch exhaust ports, said branch secondary air passages opening into said branch exhaust ports at locations in proximity to the respective exhaust valves, said secondary air passage means further including reed valves each coupled to a related manifold secondary air passage for supplying secondary air to the related set of branch exhaust ports for mixture with exhaust gases thereat.

4,417,443
MULTI-CYLINDER, DOUBLE-ACTING HOT GAS ENGINE

Stefan Lorant, Oxie, Sweden, assignor to Kommanditbolaget United Stirling (Sweden) A.B. & Co., Malmo, Sweden

Filed Aug. 13, 1981, Ser. No. 292,704
Int. Cl.³ F02G *1/04*
U.S. Cl. 60—525 **2 Claims**



1. An improved multi-cylinder double-acting hot gas engine of the kind in which each cylinder is surrounded by a ring-shaped regenerator housing, the top of each said cylinder being connected to the top of its surrounding regenerator housing by a number of heater tubes, said cylinders containing pistons connected to a single common crankshaft via connecting rods, the improvement comprising five such cylinders disposed symmetrically relative a plane perpendicular to said single crankshaft, a first cylinder and its two neighbouring cylinders along the crankshaft axis being disposed in a V-configuration, and the remaining two cylinders being arranged outside said two neighbouring cylinders with their axes disposed in a plane containing the axis of the crank shaft, said plane forming an angle with the axis of said first cylinder being less than 50% of the angle between the axis of said first cylinder and a plane containing the axes of said two neighbouring cylinders.

4,417,444
STIRLING CYCLE ENGINE

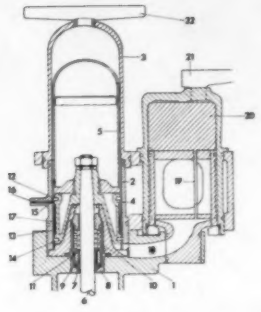
Gunnar Lundholm, Lund, Sweden, assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Oct. 5, 1981, Ser. No. 308,251
Int. Cl.³ F02G *1/00*
U.S. Cl. 60—525 **11 Claims**

1. A multi-cylinder double-acting Stirling cycle engine of the kind in which each cylinder contains a piston mounted to reciprocate therein, separating a low temperature working

space from a high temperature working space in the cylinder, and in which each piston separates two different charges of working gas from each other, wherein the improvement comprises:

at least two axially spaced piston rings disposed on each of said pistons, with an axial spacing between said piston rings being at least equal to the stroke of said piston;



each of said cylinders is defined by a cylinder wall provided with a duct opening having such axial position that it will not be passed by either of said piston rings during their reciprocating movement, said duct opening belonging to a duct leading to a source of working gas at an extreme working cycle gas pressure.

4,417,445

BRAKE MASTER CYLINDER WITH ATTACHED BRAKE BOOSTER

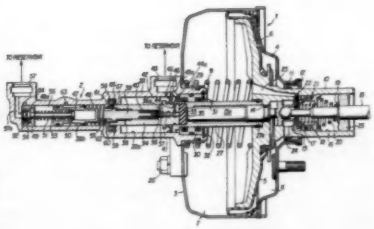
Youichi Furuta, Gifu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 69,518, Aug. 23, 1979, abandoned. This application Oct. 6, 1981, Ser. No. 309,084

Claims priority, application Japan, Aug. 26, 1978, 53-117141

Int. Cl.³ B60T *13/20*

U.S. Cl. 60—554 **3 Claims**



1. A brake master cylinder with an attached brake booster for communication with at least one wheel brake cylinder and with a reservoir comprising:

a master cylinder body,

a booster housing connected to said master cylinder body;

a power piston positioned in said booster housing and dividing said housing into first and second chambers;

a first valve mechanism mounted in said power piston wherein said first valve mechanism further comprises a brake pedal, a control valve and an air valve operatively connected to said brake pedal, said control valve being operable with said air valve and said first valve mechanism generating pressure differences between said first and second chambers in accordance with brake pedal depression force;

a hollow output member having a shoulder portion and a first end thereof being connected to said power piston and a second end thereof being slidably mounted in said master cylinder body;

a primary piston, a first end thereof being slidably mounted in said second end of said output member and a second end of said primary piston being slidably mounted in said master cylinder body;

a first hydraulic pressure chamber formed within said master cylinder body by said output member and said primary piston;

a second hydraulic pressure chamber formed within said master cylinder body by said primary piston;

a rod member unitarily formed with said air valve of said first valve mechanism, said rod member extending through said output member toward said primary piston;

a resilient member disposed in said shoulder portion of said hollow output member between said first end of said primary piston and a first end of said rod member for transmitting force to said primary piston;

first passage means for continuously communicating said second hydraulic chamber with said at least one wheel brake cylinder;

second passage means for communicating said first hydraulic chamber with said reservoir;

a second valve mechanism for opening said second passage means to establish communication between said first hydraulic chamber and said reservoir when said output member is positioned in a rest position and for closing said second passage means when said output member is moved to an active position;

third passage means for connecting said second hydraulic pressure chamber with said first hydraulic pressure chamber;

a third valve mechanism for opening said third passage means to establish communication between said first and second hydraulic pressure chambers when said primary piston is in a rest position and for closing said third passage when said primary piston is moved to an active position;

a check valve mechanism for allowing fluid flow from said first hydraulic pressure chamber to said second hydraulic pressure chamber upon said third passage means being closed;

fourth passage means provided in said primary piston for connecting said first hydraulic pressure chamber with said reservoir upon said second passage means being closed; and

a fourth valve mechanism mounted in said primary piston for controlling communication of said fourth passage means, wherein said fourth valve mechanism further comprises a rod portion extending through said primary piston toward said resilient member, a first end of said rod portion contacting with said resilient member and a spring loaded valve head for closing said fourth passage means such that said fourth valve mechanism is seated only by the force of said resilient member and is unseated by the internal pressure generated in said resilient member.

4,417,446

COMBINATION POWER PLANT

Yasunobu Nakamoto, and Toshiro Terayama, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 17, 1982, Ser. No. 359,089

Claims priority, application Japan, Mar. 20, 1981, 56-41239

Int. Cl.³ F03G *7/04*

U.S. Cl. 60—641.7 **4 Claims**

1. A combination power plant comprising:

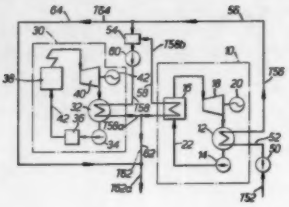
an ocean thermal energy conversion power plant including a condenser and an evaporator;

a steam power generation plant including a condenser;

a cold water pipe for passing cooling water through the

condenser in said ocean thermal energy conversion power plant;

mixing means for receiving at least a part of said cooling water from said condenser through said cold water pipe; and



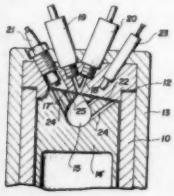
a circulating water pipe for circulating water from said mixing means serially through the condenser in said steam power generation plant and then a portion of the water to the evaporator in said ocean thermal energy conversion power plant and back into said mixing means.

4,417,447

COMBINED INTERNAL COMBUSTION AND STEAM ENGINE

Luther B. Thomas, 159 Herndon Ave., Shreveport, La. 71101

Filed May 3, 1982, Ser. No. 374,271
Int. Cl.³ F01B *29/04*
U.S. Cl. 60—712 **4 Claims**



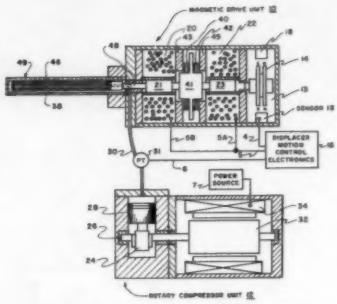
1. A combined internal combustion and steam engine of the injected type comprising a cylinder including a cylinder head and cylinder chamber, a ringless piston formed of high temperature resisting material operably mounted in the cylinder chamber and having an end face opposing a surface of the cylinder head whereby a combustion space is formed between the piston end face and the cylinder head opposing surface, the piston having an axially thick piston head rearwardly of said end face and having formed therein centrally and axially a single bulbous axially forwardly tapering piston head chamber including a constricted mouth opening through said end face centrally thereof, a multiplicity of circumferentially and radially spaced inclined axis narrow passages leading outwardly from said single piston head chamber and opening through said end face and being widely distributed in spaced relationship over the piston end face, separate fuel and water injection means on the cylinder head centrally and having convergent axes and having outlets which open through said surface of the cylinder head substantially in intersecting relationship and in registration with the constricted mouth of the tapering piston head chamber, an igniter and heat sensor means on the piston head with at least the igniter means communicating with said combustion space between the piston end face and the opposing cylinder head surface.

4,417,448

MEANS FOR PRODUCING AN OPTIMIZED COOLER EXPANDER WAVEFORM

Stuart B. Horn, Fairfax; Richard A. Wright, Falls Church, and Mark S. Asher, Blacksburg, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 20, 1982, Ser. No. 341,028
Int. Cl.³ F25B *9/00*; H02K *33/14*
U.S. Cl. 62—6 **6 Claims**



1. A means for producing an optimized cooler expander waveform for a closed cycle cryogenic cooler having reciprocating displacer-expander cooling, said means comprising:

a driving means comprised of a combined magnetic drive means and a spring biasing means in the ambient end of said cooler for driving the displacer of said cooler, wherein said magnetic driving means is further comprised of a magnetic material disc which is hard connected to said displacer between two opposing solenoids and wherein said spring biasing means is comprised of two biasing springs with one on each side of said disc; and

control means for selectively controlling said magnetic drive means wherein motion of said displacer is maintained in said optimized cooler expander waveform in which said two opposing solenoids provide control of said displacer in opposite directions according to the amount of current generated therethrough by said control means, said optimized cooler expander waveform having four portions thereto comprising about 25% each of one total cycle with a constant velocity of said displacer during the first portion of the forward stroke caused by surge current in said two opposing solenoids resulting in an acceleration time of about 1% of the total cycle, an upper flat dwell time second portion provided by extended current flow through said solenoids, an equal constant velocity of said displacer during the third portion of the return stroke caused by reverse and equal surge current with an acceleration time of about 1% of the total cycle, and a lower flat dwell time fourth portion provided by extended reverse current flow through said solenoids.

4,417,449

PROCESS FOR SEPARATING CARBON DIOXIDE AND ACID GASES FROM A CARBONACEOUS OFF-GAS

William P. Hegarty, Wescosville, and William P. Schmidt, Allentown, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jan. 15, 1982, Ser. No. 339,360
Int. Cl.³ F25J *3/00*
U.S. Cl. 62—28 **14 Claims**

1. A process for the low temperature distillation separation of a carbonaceous off-gas stream containing a quantity of acid gases, such as carbon dioxide, hydrogen sulfide and carbonyl sulfide by separating said off-gas stream into an essentially

sulfur free, light fuel gas, an acid gas and a heavy hydrocarbon stream, comprising the steps of:

(a) compressing and aftercooling an off-gas containing acid gases, light fuel gases and heavy hydrocarbons;

(b) drying the compressed and aftercooled off-gas to remove moisture therefrom;

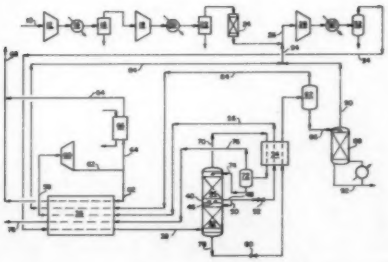
(c) subcooling the combined off-gas and a recycle stream against product streams in a heat exchanger;

(d) separating the subcooled off-gas in a distillation column into an initial fuel gas stream as an overhead fraction, a carbon dioxide and sulfide stream as a liquid sidestream containing the major portion of said quantity of acid gases and an initial heavy hydrocarbon and carbon dioxide stream as a bottom liquid fraction;

(e) expanding the carbon dioxide and sulfide liquid side stream in an auto refrigeration cycle for the subcooling of the off-gas in the heat exchanger of step (c) before releasing the stream as a carbon dioxide and sulfide product stream;

(f) cooling and separating said initial fuel gas stream into a final fuel gas stream containing a minor portion of said quantity of acid gases and a carbon dioxide stream which is recycled to said column as reflux to the distillation column;

(g) separating said initial heavy hydrocarbon and carbon dioxide stream into a carbon dioxide stream containing the balance of said quantity of acid gases which is recycled to the compression stage of the process and a substantially pure heavy hydrocarbon stream which is a product stream of said process.



3. A process for the low temperature distillation separation of a carbonaceous, pressurized off-gas stream containing a quantity of acid gases, such as carbon dioxide, hydrogen sulfide and carbonyl sulfide by separating said off-gas stream into an essentially sulfur free, light fuel gas, an acid gas and a heavy hydrocarbon stream, comprising the steps of:

(a) subcooling a pressurized off-gas containing acid gases, light fuel gases and heavy hydrocarbons and a recycle stream combined with said off-gases against product streams in a heat exchanger;

(b) separating the subcooled off-gas in a distillation column into an initial fuel gas stream as an overhead fraction, a carbon dioxide and sulfide stream as a liquid sidestream containing the major portion of said quantity of acid gases and an initial heavy hydrocarbon and carbon dioxide stream as a bottom liquid fraction;

(c) expanding the carbon dioxide and sulfide liquid sidestream in an auto refrigeration cycle for the subcooling of the off-gas in the heat exchanger of step (a) before releasing the stream as a carbon dioxide and sulfide product stream;

(d) cooling and separating said initial fuel gas stream into a final fuel gas stream containing a minor portion of said quantity of acid gases and a carbon dioxide stream which is recycled to said column as reflux to the distillation column;

(e) separating said initial heavy hydrocarbon and carbon dioxide stream into a carbon dioxide stream containing the balance of said quantity of acid gases which is recycled to the compression stage of the process and a substantially pure heavy hydrocarbon stream which is a product stream of said process.

14. A process for recycling a portion of an oil shale retort off-gas stream containing a quantity of acid gases, such as carbon dioxide, hydrogen sulfide and carbonyl sulfide by low temperature distillation separation of said off-gas stream into an essentially sulfur free, light fuel gas, an acid gas and a heavy hydrocarbon stream, comprising the steps of:

(a) compressing and aftercooling an off-gas from an oil shale retort containing acid gases, light fuel gases and heavy hydrocarbons;

(b) drying the compressed and aftercooled off-gas to remove moisture therefrom;

(c) subcooling the combined off-gas and a recycle stream against product streams in a heat exchanger;

(d) separating the subcooled off-gas in a two tiered distillation column into an initial fuel gas stream as an overhead fraction, an initial carbon dioxide and sulfide acid gas stream as a liquid sidestream containing the major portion of said quantity of acid gases and an initial heavy hydrocarbon and carbon dioxide stream as a bottom liquid fraction;

(e) expanding the initial carbon dioxide and sulfide stream in order to cool the initial fuel gas stream in a heat exchanger;

(f) cooling and separating said initial fuel gas stream into a final fuel gas stream containing a minor portion of said quantity of acid gases and a carbon dioxide stream which is recycled to said column as reflux to the distillation column;

(g) further expanding the carbon dioxide and sulfide side stream in an expander turbine to produce auto refrigeration for the subcooling of the off-gas in the heat exchanger of step (c);

(h) separating said initial heavy hydrocarbon and carbon dioxide stream into a carbon dioxide stream containing the balance of said quantity of acid gases which is recycled to the compression stage of the process and a substantially pure heavy hydrocarbon stream which is a product stream of said process;

(i) recycling said carbon dioxide and sulfide stream to an oil shale retort as a product stream.

4,417,450

ENERGY MANAGEMENT SYSTEM FOR VENDING MACHINES

Annis R. Morgan, Jr., and Eddie W. King, both of Atlanta, Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 198,172, Oct. 17, 1980. This application Mar. 31, 1982, Ser. No. 363,961

Int. Cl.[3] **F25B** *49/00*; **G05D** *23/32*; **F25D** *17/06*

U.S. Cl. 62—126 **10 Claims**

1. In a chilled product vending machine including a refrigeration compressor, temperature sensor means for detecting the temperature within said vending machine and turning said compressor ON and OFF to define a compressor cycle in response to the detection of predetermined temperature limits, an evaporator coil and evaporator fan means for blowing air across said evaporator coil and circulating said air throughout said vending machine, an energy management system comprising:

control means for cycling said evaporator fan means ON simultaneously with said compressor for a time period at least as long as said compressor cycle;

delay means for cycling said evaporator fan means OFF at the end of a predetermined delay period after said compressor is turned OFF, said period of time being long enough to permit the temperature of said evaporator coil to temperature stabilize above the freezing temperature of water;

memory means for storing a plurality of predetermined

delay periods of different durations related to cooling characteristics of refrigeration systems of different types of vending machines; and

selector switch means for selectively generating coded signals related to the respective different types of vending machines and applying said signals to said memory means for selectively retrieving an appropriate one of said delay periods for implementation by said delay means;

whereby different types of vending machines with different cooling characteristics can be readily retrofitted with said energy management system.

4,417,451

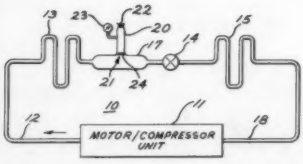
VAPOR COMPRESSION REFRIGERANT SYSTEM MONITOR AND GAS REMOVAL APPARATUS

Hans O. Spauschus, Atlanta, Ga., assignor to Hilliard-Lyons Patent Management, Inc.

Continuation-in-part of Ser. No. 147,691, May 7, 1980, Pat. No. 4,316,364. This application Jan. 18, 1982, Ser. No. 339,855

Int. Cl.³ F25B *43/04*; G01K *13/00*

U.S. Cl. 62—129 **9 Claims**



1. Condition monitoring apparatus for a halocarbon vapor compression refrigerant system having a refrigerant flow circuit including a compressor, a condenser, fluid expansion means and an evaporator, said monitoring apparatus comprising:

gas accumulating means positioned in the refrigerant circuit at a high point in the high pressure side to which non-condensable contaminant gases in the refrigerant stream migrate during operation of the system;

an inlet port coupling the gas accumulating means in fluid communication with the refrigerant circuit;

a purge valve secured to the gas accumulating means for exhausting unwanted contaminant gases accumulated therein;

a perm-selective membrane positioned across the inlet port to selectively admit predetermined contaminant gases into the gas accumulating means without significant loss of halocarbon vapor;

and indicia means coupled to the gas accumulating means for providing indicia representative of the degree of accumulation of the contaminant gases therein, whereby an in-situ indication of the onset of a system malfunction is provided.

4,417,452

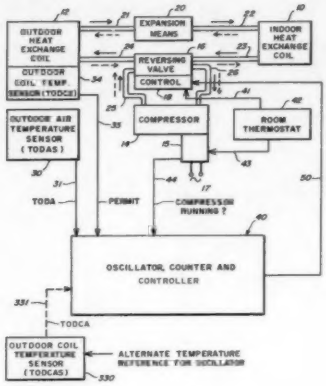
HEAT PUMP SYSTEM DEFROST CONTROL

Robert T. Ruminsky, Bloomington, and Stephen L. Serber, New Hope, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 109,743, Jan. 4, 1980, abandoned. This application Jun. 30, 1981, Ser. No. 278,942

Int. Cl.³ F25D *21/06*

U.S. Cl. 62—155 **3 Claims**



1. An outdoor coil defrost control system (hereinafter "defrost control system") for a reverse cycle refrigeration system (hereinafter "system") for heating and cooling a building wherein said system comprises refrigerant compression means, an indoor coil, an outdoor coil, and refrigerant conduit means connecting said compression means and said coils, said defrost control system comprising:

first outdoor coil temperature sensing means (hereinafter "TODCSA") having an output indicative of outdoor air temperature (hereinafter "TODCA");

second outdoor coil temperature sensing means (hereinafter "TODCS") having an output indicative of the temperature of said outdoor coil (hereinafter "TODC");

means (hereinafter "COM") operatively associated with said compression means and adapted to have an output indicative of the operation of said compression means; and

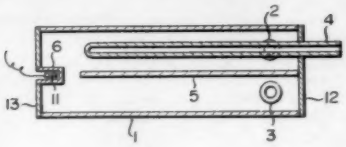
controller means having operative connections to said TODSCA, TODCS, and COM so as to receive the outputs thereof, said controller having a TODCA monitoring function which is initiated upon (i) TODC being at or below a preselected value and (ii) said compression means being operated, said controller means further comprising (1) a variable frequency electronic oscillator having an input connected to TODCSA by means so as to receive a signal indicative of TODCA and an output signal the frequency of which is maximum at a preselected value of TODCA and continuously decreases as the value of TODCA deviates either above or below said preselected value; (2) a counter means having an input connected to receive the output signal of said variable frequency oscillator; and (3) means for connecting said counter means to said system, and being adapted, upon said counter means counting a preselected number of pulses, to place said system into an outdoor coil defrost mode of operation.

4,417,453

LIQUID SEPARATOR FOR USE IN A REFRIGERATING AIR CONDITIONING APPARATUS

Yoshio Sasaki, Nagasaki, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1982, Ser. No. 358,606
Claims priority, application Japan, Apr. 17, 1981, 56-56071[U]
Int. Cl.³ F25B 43/00
U.S. Cl. 62—503 2 Claims



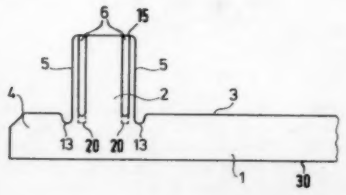
1. A liquid separator for use in a refrigerating apparatus and adapted to be provided in a refrigerant gas pipeline connecting the evaporator and the compressor of the refrigerating apparatus, said separator comprising: a container having a generally cylindrical form with end plates closing the ends thereof, a partition plate in said container and dividing the inside of said container into two spaces which are in communication with each other at one of the longitudinal ends of said container, a liquified refrigerant coil disposed withon one of said spaces and extending longitudinally along said partition plate in a zig-zag fashion and substantially filling said one space and having both end portions extending through the container at one of the ends of said container for receiving liquified refrigerant from the compressor, a refrigerant gas inlet in said container and opening into said one of said spaces at the other longitudinal end of said container, a refrigerant gas outlet in said container and opening out of the other of said spaces at said other longitudinal end of said container.

4,417,454

NEEDLE FOR KNITTING MACHINES AND METHOD FOR MAKING SAME

Hardo Berentzem, Albstadt, Fed. Rep. of Germany, assignor to Theodor Groz & Sohne and Ernst Becker & Nadelfabrik Commandit-Gesellschaft, both of Albstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 126,046, Feb. 29, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,520
Claims priority, application Fed. Rep. of Germany, Mar. 22, 1979, 2911195
Int. Cl.³ D04B 35/02
U.S. Cl. 66—123 5 Claims



1. In a knitting machine needle of the type having a flat elongated, longitudinally-extending shank having an upper and lower edge and an integrally-formed foot which extends generally transversely to the longitudinal axis of said needle shank and projects above its upper edge, said foot having a generally rectangular cross sectional shape and two opposite side faces and two opposite front faces, the improvement comprising:

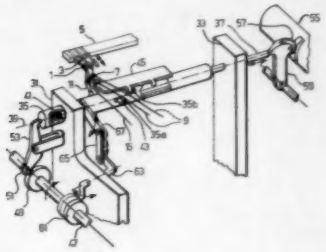
an elongated, longitudinally-extending groove in at least one of the side faces of said foot extending in a direction from the upper edge of said needle shank to the upper edge of said needle foot.

4,417,455

MACHINE FOR THE PRODUCTION OF KNITTED GOODS AND METHOD OF THE MACHINE

Gerard Durville, Sisseln, Switzerland, assignor to Textilma AG, Switzerland

Filed Jul. 3, 1980, Ser. No. 165,498
Claims priority, application Switzerland, Jul. 4, 1979, 6236/79; Fed. Rep. of Germany, Jul. 30, 1979, 2930824
Int. Cl.³ D04B 23/00
U.S. Cl. 66—207 14 Claims



1. A knitting machine comprising:

a frame;

a plurality of needles;

a needle carrier connected to said frame for movably carrying said needles, said plurality of needles including at least one needle at an end of said needle carrier and a plurality of intermediate needles, said needles reciprocally movable on said carrier to form stitches with each movement of said needles;

two elongated members mounted to said frame and pivotable about a common pivot axis, said elongated members being axially displaceable along the pivot axis relative to each other;

connecting means interconnecting said elongated members for securing them against rotational movement relative each other;

a first row of thread guides mounted to one of said elongated members for guiding a first plurality of warp threads;

a second row of thread guides mounted to the other of said elongated members for guiding a second plurality of warp threads;

first drive means connected to said elongated members for pivoting said elongaged members about the pivot axis to move said first and second row of thread guides with respect to said plurality of needles for lifting the first and second plurality of warp threads above and lowering the first and second plurality of warp threads below said plurality of needles; and

second drive means connected to said first and second elongated members for moving said first and second elongated members axially on the pivot axis and relative to each other;

said first and second drive means interengaged for synchronous operation so that two different warp threads of the first and second plurality of warp threads are laid around respective ones of said plurality of intermediate needles during each movement of said needles for forming a stitch with warp threads of one of the first and second plurality of warp threads being alternately laid around one of said intermediate needles and another one of said intermediate needles during a successive movement of the needles to form a successive stitch.

4,417,456

THREAD POSITIONING APPARATUS FOR A WARP KNITTING MACHINE

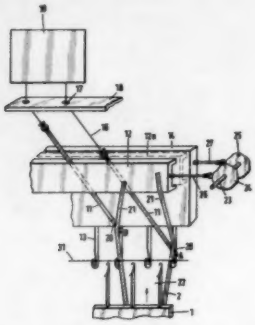
Gerhard Bergmann, Frankfurter Strasse 41, 6053 Obertshausen, and Erhard Henz, Friedhofstrasse 56, 6056 Heusenstamm, both of Fed. Rep. of Germany

Filed Jun. 22, 1981, Ser. No. 275,703

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1980, 3023952

Int. Cl.³ D04B *27/02*

U.S. Cl. 66—214 10 Claims



1. A warp knitting machine having a needle bed and a jacquard arrangement for producing from a plurality of threads, patterned wear, comprising:

(a) a thread positioning bar;

(b) a plurality of thread positioning sinkers mounted on said thread positioning bar and spaced to allow said sinkers to pass between the needles of said bed;

(c) at least one guide bar; and

(d) a plurality of thread guides mounted on said guide bar for separately guiding said threads, said thread guides being operable by said jacquard arrangement to move longitudinally relative to said guide bar and with a component of motion in a plane alongside said needle bed, said component being sized to allow each of said threads to reciprocate between and be pulled against the interior sides of a corresponding, neighboring pair of said sinkers.

4,417,457

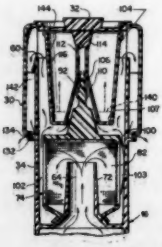
AGITATOR MOUNTED DISPENSER AND SHOWER SPRAY DEVICE FOR AUTOMATIC WASHER

Robert A. Brenner, St. Joseph Township, Berrien County, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sep. 14, 1982, Ser. No. 417,839

Int. Cl.³ D06F *39/02*

U.S. Cl. 68—17 A 9 Claims



1. In an automatic washer having a clothes containing basket and an upright agitator including an outer barrel adapted to pump washing liquid through a passage formed internally of the agitator, a wash additive dispenser comprising:

a cup for containing wash additive to be dispensed;

a mounting means for said cup for positioning the cup for floatation within said outer barrel;

opening means exposed by floatation of said cup for allowing wash liquid to enter said cup;

a terminal lip on said outer barrel over which liquid pumped by said agitator will overflow during a wash operation of said washer;

a sleeve, spaced outwardly of and forming an annular chamber with said outer barrel, said sleeve having upper and lower terminal portions extending toward said outer barrel;

stop means associated with said sleeve for restraining said cup during floatation in a position wherein said opening means is at a level allowing wash liquid to enter said cup when wash liquid overflows said terminal lip;

shower spray opening means defined by said sleeve and said barrel at a location spaced below said terminal lip and sized to restrict the flow of wash liquid from said shower spray openings to allow accumulation of wash liquid in said annular chamber and the creation of a liquid head at a level above said terminal lip; and

means for centrifugally spinning said agitator and said cup to expel wash additive from said cup and into said annular chamber whereby the wash additive is retained in said chamber until the centrifugal spinning is terminated at which time the wash additive is allowed to drain into said basket through said shower spray opening means.

4,417,458

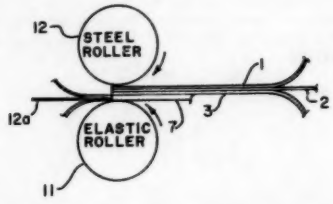
PATTERN MATRIX FOR SKIVING SHOE PARTS

Robert F. Goellner, Creve Coeur, Mo., assignor to Manufacturers Supplies Co., St. Louis, Mo.

Filed Sep. 14, 1981, Ser. No. 301,880

Int. Cl.³ A43D *8/28, 8/48;* C14B *1/02*

U.S. Cl. 69—13 17 Claims

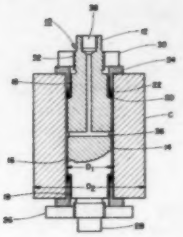


1. A pattern matrix for use in conjunction with a splitter machine for skiving select marginal edges of shoe parts in preparation for their folding and fabrication into a shoe, comprising, a pattern matrix formed of a sheet of material and having at least one select edge shaped substantially in the configuration of the shape to be obtained for the intended shoe part to obtain its alignment, relief means provided contiguously along one matrix edge to assure skiving of any overlying shoe part at least at the location of the said relief means, and means provided substantially aligned with the relief means and providing for skiving at a greater depth at the location of said means that can be obtained at the relief means for assuring a weakened fold line along the length of the select skived edge for the shoe part.

4,417,459
AUTOFRETTAGE PROCESS

Nobuya Tomita, Fairfield, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Jul. 30, 1981, Ser. No. 288,432
Int. Cl.³ B21D *26/02*
U.S. Cl. 72—56 29 Claims



1. A process of subjecting a generally thickwalled, hollow cylindrical member to autofrettage including sealing the inner bore of said cylindrical member, and pressurizing said inner bore; comprising the steps of:

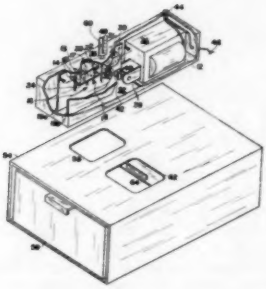
a. imparting a predetermined pressure to the entire length of said inner bore for a period of time; and

b. cyclically repeating the application of the same pressure so as to plastically deform the inner bore of said cylindrical member and produce residual tangential compressive stresses in said bore.

4,417,460
HYPODERMIC SYRINGE DESTRUCTION DEVICE

Dario J. Moriconi, 6616 La Miroda Dr., Apt. #1, Jacksonville, Fla. 32117

Filed Mar. 9, 1981, Ser. No. 241,561
Int. Cl.³ B21D *28/00*
U.S. Cl. 72—325 1 Claim



1. A hypodermic syringe destruction device for severing a syringe portion and bending a needle of a hypodermic syringe comprising:

a housing having an upper side and an opening in said upper side through which the needle end region of a hypodermic syringe may be generally vertically inserted downward, said opening having an axis with the syringe being insertable through said opening parallel to said axis;

a movable support within said housing and immediately below said upper side and supported by said housing for linear movement generally horizonally and transverse to said axis of said opening;

a blade attached to said movable support and lying in a generally horizontal plane and having an oblique edge which passes across and just under said opening in said upper side of said housing;

a hammer supported on said movable support and spaced below said blade, said hammer and support being generally L-shaped in cross section with said support forming a generally vertical wall facing the axis of said opening and with said hammer comprising a lower, generally horizontal plate extending outward from said generally vertical wall;

an anvil having a horizontal upper surface fixedly attached to the inside of said housing on the opposite side of said opening from said movable support and having a sloping surface which generally faces the vertical axis of said opening but slopes downward toward said vertical axis and having a generally horizontal lower surface at an elevation just above the upper surface of said lower plate of said hammer with said horizontal lower surface being spaced from the upper surface of said lower plate sufficient to bend the syringe needle therebetween, said anvil being opposite said support such that said anvil horizontal upper surface is coplanar with said blade lying in a horizontal plane and said sloping surface extends in a continuous manner from said horizontal upper surface to said horizontal lower surface;

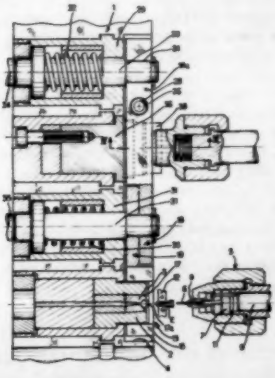
operating means for selectively moving said movable support toward said anvil comprising a solenoid having a body region attached to said housing and a movable arm attached to said movable support, whereby, when a hypodermic syringe needle is inserted into said opening and said solenoid is operated, said L-shaped portion of said hammer bends the needle around said lower surface of said anvil, and a portion of the syringe holding said needle is supportable against the sloping surface of said anvil and is severed by said edge of said blade; and

a container positioned to receive the severed needle end region of a hypodermic syringe.

4,417,461
DEVICE FOR MANUFACTURING, BY EXTRUSION, A PIECE HAVING A RECESSED PORTION IN ITS PERIPHERAL SURFACE

Jean Buffon, Corbeil, and Edouard Trome, Aulnay-sous-Bois, both of France, assignors to Societe Anonyme dite: Ulmic France, Rungis, France

Filed Jan. 22, 1981, Ser. No. 227,360
Claims priority, application France, Jan. 21, 1980, 80 01235
Int. Cl.³ B21D *45/00*
U.S. Cl. 72—345 17 Claims



1. A device for extruding a piece having a recessed portion in its lateral surface, comprising a fixed die holder containing a die, a punch borne by a mobile support, means for axially displacing said punch to engage said punch in said die and disengage it therefrom, means for ejecting an extruded piece,

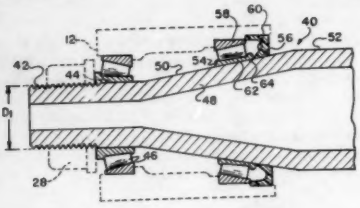
and in front of said fixed die holder, a coaxial mobile due holder, means for opening and closing said mobile die holder, means for displacing said mobile die holder in translation parallel to the axis of said punch and of said die, said mobile die holder having two jaws applied against each other when said mobile die holder is closed, said jaws being provided respectively at the ends of two arms mounted to pivot on each other about a first pin passing through opposite holes made in said arms, whereby said mobile die holder forms a clamp.

4,417,462

AXLE SPINDLE AND METHOD FOR MAKING THE SAME

John Palovcik, Kenton, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 182,283, Aug. 28, 1980, abandoned, which is a division of Ser. No. 62,713, Aug. 1, 1979, abandoned.
This application Dec. 4, 1981, Ser. No. 327,313
Int. Cl.³ B21D *41/00, 51/10*; B60B *35/00*
U.S. Cl. 72—367 **3 Claims**



1. A method of forming an axle spindle and bearing assembly for a vehicle wheel of the type to be utilized in heavy duty truck and trailer applications, said vehicle wheel being subjected to normal operating forces which require a pair of tapered roller bearings for its support and produce primary stresses in said axle spindle at an inwardly position tapered roller bearing of said pair, said method comprising: providing a hollow tubular blank having a central axis, a generally uniform external diameter and wall thickness and a first open end; reducing said tubular blank at a first region including said first end concentric with said central axis to provide a first diameter therefor; forming a transition region with a relatively uniform thickness having a frusto-conical outer surface between said first region and a portion of said tubular blank which is free of said reducing and remote from said first end; machining an area of said first region and an area of said frusto-conical outer surface for respectively receiving first and second tapered roller bearings of said pair thereon for rotatably supporting said wheel on said spindle, said second tapered roller bearing being said inwardly positioned tapered roller bearing of said pair; providing said first tapered roller bearing with an inner race having a cylindrical inner surface matching said area of said first region and providing said second tapered roller bearing with an inner race having a frusto-conical inner surface matching said area of said frusto-conical outer surface to provide the only contact between said second tapered roller bearing and said axle spindle.

4,417,463

RAM ASSEMBLY FOR ELECTROMAGNETIC RIVETER

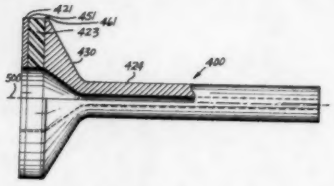
Paul E. Nelson, Tacoma, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 28, 1981, Ser. No. 305,817
Int. Cl.³ B21J *7/30, 15/24*
U.S. Cl. 72—430 **1 Claim**

1. In combination, for use in an electromagnetic work tool: a ram assembly comprising a ram shaft, conductive driving plate, and insulator plug fastened together to provide an integral structure;

said ram shaft having a flange-like end portion providing a flat major surface area;

said insulator plug comprising a cylinder-like composite structure of glass fibers in an epoxy matrix, said glass



fibers disposed in parallel relationship with said central axis of said ram shaft;

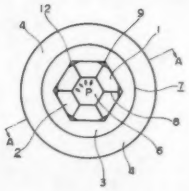
said cylinder-like composite structure having two major surface areas, a bond line between a first of said two major surface areas and said conductive driving plate, and a further bond line between a second of said two major surface areas and said flat major surface area.

4,417,464

NIB FOR FORMING TOOL FOR BOLT HEADS OR NUTS

Akio Tosa, Gifu, Japan, assignor to Mitsutoyo Kiko Co., Ltd., Kasugai, Japan

PCT No. PCT/JP81/00057, § 371 Date Nov. 4, 1981, § 102(e) Date Nov. 4, 1981, PCT Pub. No. WO81/02697, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 13, 1981, Ser. No. 320,963
Claims priority, application Japan, Apr. 18, 1980, 55-34622
Int. Cl.³ B21J *13/02*; B21K *1/46, 1/64*
U.S. Cl. 72—478 **8 Claims**



1. A nib for a forming tool used to form bolt heads or nuts, said nib comprising:

(a) a plurality of nib segments each one of which has a surface perpendicular to the axis of the tool in the shape of a symmetric trapezoid:

(i) the shorter parallel side of which defines one edge of a central work-receiving volume the cross-sectional shape of which perpendicular to the axis of the tool is a first regular polygon,

(ii) the longer parallel side of which defines one edge of the outer circumference of a segment combination nib the cross-sectional shape of which perpendicular to the axis of the tool is a second regular polygon which is similar to, concentric with, and angularly congruent to the first regular polygon, and

(iii) the non-parallel sides of which are radial to the axis of the tool and

(b) a bush intimately fitted around said segment combination nib, said bush having a central opening parallel to the axis of the tool the cross-sectional shape of which perpendicular to the axis of the tool is the same as said second polygon,

(c) a stress-absorbing hole being defined at the intersection

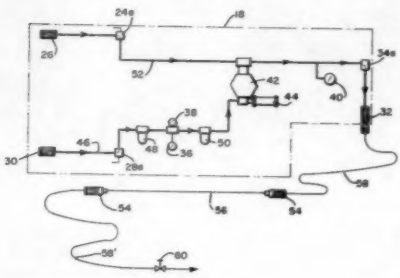
of each of the non-parallel sides of said nib segments with the vertices of said second polygon, said stress-absorbing holes extending axially parallel to the axis of the tool and being symmetrical with respect to the plane defined by adjacent ones of the non-parallel sides of said nib segments.

4,417,465

PORTABLE TEST UNIT, FOR HIGH PRESSURE TESTING OF TUBES

Renato R. Noe, 1609 West St., Union City, N.J. 07087, and Michael C. Catapano, 422 St. Pauls Ave., Jersey City, N.J. 07306

Filed Nov. 30, 1981, Ser. No. 325,961
Int. Cl.³ G01M *3/28*
U.S. Cl. 73—49.5 **4 Claims**



1. A portable test unit, for high-pressure testing of tubes, comprising:

a chassis;

an enclosure removably coupled to said chassis;

said enclosure having an external control panel;

said control panel being breached by only three apertures;

a compressed-air-operative, hydraulic pump confined within said enclosure;

a first conduit communicating one of said apertures with said pump, within said enclosure;

a second conduit communicating another of said apertures with said pump, within said enclosure; and

a third conduit communicating said pump with the third of said apertures, within said enclosure; wherein

said first and second conduits communicate with said pump in parallel;

said third conduit communicates with said pump and said third aperture in series with one of said first and second conduits;

said first conduit defining means for conducting operative compressed air to said pump;

said second conduit defines means for conducting hydraulic fluid to said pump; and

said third conduit defines means for conducting hydraulic fluid, under pressure, from said pump to said third aperture; and further including

valving means, in communication with said first and second conduits, for controlling compressed air and hydraulic fluid conduct between said one and another apertures and said first and second conduits; wherein

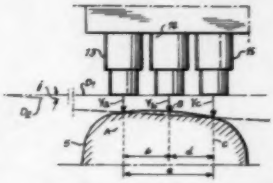
said valving means comprises manual control means, mounted on said control panel, for operating said valving means.

4,417,466

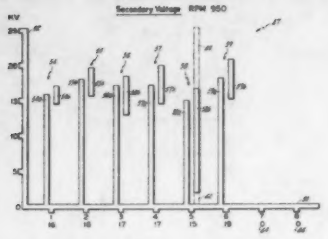
MEASURING METHOD AND DEVICE FOR MEASURING AT LEAST ONE GEOMETRICAL CHARACTERISTIC OF THE HEAD OF THE RAILS OF A RAILWAY TRACK

Romolo Panetti, Geneva, Switzerland, assignor to Speno International S.A., Geneva, Switzerland

Filed Jun. 23, 1981, Ser. No. 277,201
Claims priority, application European Pat. Off., Dec. 15, 1980, 80107901; Switzerland, Jul. 24, 1980, 5659/80; Jul. 24, 1980, 5660/80
Int. Cl.³ G01B *7/28*
U.S. Cl. 73—105 **11 Claims**



display means, responsive to said signal processing means for displaying visually, in rectangular coordinates, each cylinder's associated mean value and mean deviation value signal as dual parallel bar segments including a first bar representing said mean value and a second bar adjacent thereto and representing said mean deviation value, said first bar extending perpendicularly from said rectangular coordinate abscissa to a length representative of said mean



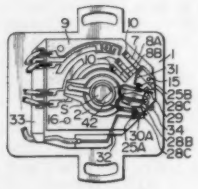
value as indicated on a scaled ordinate, said second bar being generally centered about said first bar mean value and extending at either end to the actual peak value and actual minimum value obtained for the set of measured parameter data, whereby said dual bar segments provide four visual indices of cylinder performance including the parameter mean value, the minimum and maximum parameter values, and the parameter mean deviation value.

4,417,468

SWITCHING DEVICE FOR DETECTING ROTATIONAL POSITIONS OF ROTARY SHAFT

Kelichi Yasuda, Ogaki; Takaaki Ori, Nagoya, and Kazumasa Nakamura, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Filed Sep. 11, 1981, Ser. No. 301,450
Claims priority, application Japan, Feb. 19, 1981, 56-21494[U]
Int. Cl.³ G01M *13/02*
U.S. Cl. 73—118 **4 Claims**



1. A switching device for detecting the rotational position of a rotary shaft, comprising:

a lever provided for rotating with the rotary shaft;

a rotor rotated by the lever with a certain amount of hysteresis between the rotor and the lever;

an electrically conductive plate spring which is bent and mounted on the lever, said plate spring including a central portion which is fixed on said lever and two side portions each disposed on one side of the central portion;

projections formed on the lever for holding the side portions of the plate spring in position in fixed condition;

first and second movable electrical contacts each mounted on one of the side portions of the plate spring;

a first electrical contact formed on a fixed member for cooperation with said first movable electrical contact for detecting a first rotational position of the rotary shaft; and

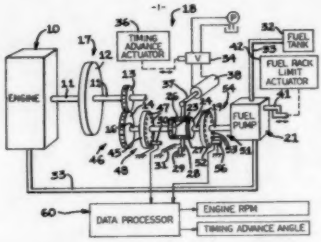
a second electrical contact formed on the rotor for cooperation with said second movable electrical contact for detecting a second rotational position of the rotary shaft.

4,417,469

SPEED AND TIMING ANGLE MEASUREMENT

Thomas T. Stevenson, and Marios C. Zenios, both of Peoria, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US81/00268, § 371 Date Mar. 3, 1981, § 102(e) Date Mar. 3, 1981, PCT Pub. No. WO82/03125, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 3, 1981, Ser. No. 277,744
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 A **31 Claims**



1. In a system having first and second rotatable shafts (16, 19) timing means (18) for rotatably driving one (19) of said shafts (16,19) by the other (16) and for varying, within a predetermined range, the angular relationship between said shafts (16,19), and drive means (17) for driving the other (16) of said shafts (16,19) at a selectable speed of rotation, the improvement comprising:

at least one first sensible member (47) rotatable at a speed constantly proportional to the speed of said first shaft (16) and movable through a first circular path;

a first signal generating means (48) for generating a first signal (49) in response to movement of each first sensible member (47) past a predetermined point (50) in said first circular path;

at least one second sensible member (53) rotatable at a speed constantly proportional to the speed of said second shaft (19) and movable through a second circular path;

a second signal generating means (54) for generating a second signal (55) in response to movement of each second sensible member (53) past a predetermined point (56) in said second circular path;

clock means (65) for generating a series of fixed frequency clock pulses;

counting means (78) for:

(a) obtaining a first count of the number of clock pulses occurring in the time interval (T_1) beginning and ending with consecutive signals (49) from one (48) of said first and second signal generators (48,54); and

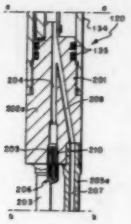
(b) obtaining a second count of the number of clock pulses occurring in the time interval (T_2) beginning with a signal (55) from one (54) of said first and second signal generators (48,54) and ending with a successive signal (49) from the other (48) of said first and second signal generators (48,54); and

angle-indicating means (79–83) for generating an angle-indication signal proportional to the ratio of said first and second counts of said counting means (78).

4,417,470
ELECTRONIC TEMPERATURE SENSOR

Oliver W. McCracken, Pauls Valley, Okla., and James H. Bostock, Denton, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Sep. 30, 1981, Ser. No. 307,284
Int. Cl.³ E21B 47/06
U.S. Cl. 73—154 7 Claims



1. A temperature sensor for measuring well fluid temperatures comprising:

a. a terminal for receiving electrical power supplied to the sensor and transmitting information from the sensor;

b. a temperature sensing element which changes its electrical output in proportion to the surrounding fluid temperature;

c. a voltage to frequency converter;

d. a voltage regulating network connecting the terminal with both the sensing element and the converter and directing electrical power to each;

e. the output from the sensing element supplying an input to the converter;

f. the converter producing a frequency signal which is proportional to the output from the sensing element;

g. a well tool carrying the electrical components of the sensor;

h. a plug means with threads on one end for engagement with the well tool;

i. a longitudinal bore extending through the plug means having an enlarged inside diameter portion opposite the one end;

j. a heat sink disposed within the enlarged inside diameter portion and having a cavity extending partially therethrough;

k. the cavity and longitudinal bore communicating with each other to allow installation of the temperature sensing element within the cavity; and

l. thermal insulating material disposed between the exterior of the heat sink and the interior of the enlarged inside diameter portion.

4,417,471
GAS FLOW MEASURING DEVICE

Hisasi Kawai, Toyohashi; Tsuneyuki Egami, Aichi; Tokio Kohama, Nishio, and Hideki Obayashi, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Continuation of Ser. No. 92,024, Nov. 7, 1979, Pat. No. 4,332,165. This application Nov. 23, 1981, Ser. No. 324,152
Claims priority, application Japan, Nov. 10, 1978, 53-139142; Nov. 13, 1978, 53-140186
The portion of the term of this patent subsequent to Jun. 1, 1999. has been disclaimed.
Int. Cl.³ G01F 1/62
U.S. Cl. 73—204 4 Claims

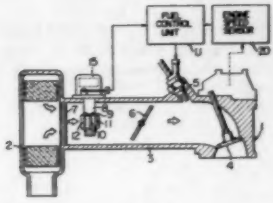
1. A gas flow measuring device comprising:

a flow rate measuring pipe disposed within a conduit for a gas whose flow rate is to be measured, said flow rate measuring pipe defining a single gas passage extending in the axial direction of said conduit;

a first temperature dependent resistor, an electric heater and a second temperature dependent resistor disposed within the single gas passage defined by said flow rate measuring pipe and along the flow of the gas within said single gas passage, said electric heater being located between said first and second temperature dependent resistors; and

a measuring circuit connected to said first and second temperature dependent resistors and to said electric heater to generate an output voltage indicative of the flow rate of the gas depending on the resistance values of said first and second temperature dependent resistors;

said measuring circuit including a first reference resistor and a second reference resistor constituting a bridge circuit together with said first and second temperature dependent resistors; a first differential amplifier circuit d.c. coupled to said bridge circuit for the amplification of the potential

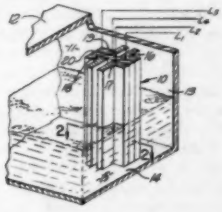


difference between the potentials at the diagonal points of said bridge circuit, a second differential amplifier circuit d.c. coupled to said first differential amplifier circuit and a constant reference voltage for producing an output voltage proportionate to the difference between the amplified output voltage of said first differential amplifier circuit and said constant reference voltage; a power amplifier connected to said second differential amplifier circuit for the power amplification of the amplified output voltage of said second differential amplifier circuit; and and output resistor connected to said power amplifier and to said electric heater to provide thereacross said output voltage the third power of which is proportional to the flow rate of the gas subjected to the flow rate measurement.

4,417,472
FLUID LEVEL SENSOR

Emanuel Tward, Northridge, Calif., assignor to Tward 2001 Limited, Los Angeles, Calif.

Filed Feb. 3, 1982, Ser. No. 345,351
Int. Cl.³ G01F 23/26
U.S. Cl. 73—304 C 12 Claims



1. A capacitive type fluid level sensor for mounting in a fluid storage vessel for sensing the level of the fluid within said vessel over a predetermined height range comprising:

(a) four electrically conductive capacitor elements each formed to present two electrically connected capacitive plates, said elements having a length at least equal to said height range;

(b) means for mounting said capacitor elements in fixed spaced relationship from one another and for positioning

said elements so that each capacitive plate thereof defines with a capacitive plate of the next adjacent capacitor element a dielectric space therebetween whereby said mounted capacitor elements together form four dielectric spaces; and

(c) material of known constant dielectric value within two of the dielectric spaces thereby forming with their respective space defining capacitive plates two capacitors of fixed electrical capacitive value,

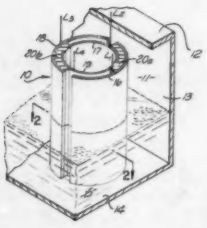
the remaining two dielectric spaces being open to receive varying levels of the fluid within said storage vessel thereby forming with their respective capacitive plates two capacitors of variable electrical capacitive value.

4,417,473

MULTI-CAPACITOR FLUID LEVEL SENSOR

Emanuel Tward, Northridge, and Philip D. Junkins, Los Angeles, both of Calif., assignors to Tward 2001 Limited, Los Angeles, Calif.

Filed Feb. 3, 1982, Ser. No. 345,353
Int. Cl.³ G01F *23/26*
U.S. Cl. 73—304 C **10 Claims**



1. A tubular shaped capacitive type fluid level sensor for mounting in a fluid storage vessel for sensing the level of the fluid within said vessel over a predetermined height range comprising:

(a) a first pair of electrically conductive capacitor elements each formed to present two electrically connected capacitive plate areas, said first pair of capacitor elements and their respective plate areas having a length at least equal to said height range and shaped to generaly define together the outer periphery of said tubular sensor;

(b) a second pair of electrically conductive capacitor elements each formed to present two electrically connected capacitive plate areas, said second pair of capacitor elements and their respective plate areas having a length at least equal to said height range and shaped to generally define together the inner periphery of said tubular sensor;

(c) means forned of electrically insulating material located between the capacitor elements defining the outer periphery of said sensor and the capacitor elements defining the inner periphery of said sensor for mounting said capacitor elements in fixed spaced relationship from one another and for positioning said elements so that each capacitive plate area thereof defines with a capacitive plate area of the next adjacent capacitor element a dielectric space therebetween whereby said mounted capacitor elements together form four like dielectric spaces; and

(d) material of known constant dielectric value within two of the dielectric spaces thereby forming with their respective space defining capacitive plate areas two capacitors of fixed electrical capacitive value,

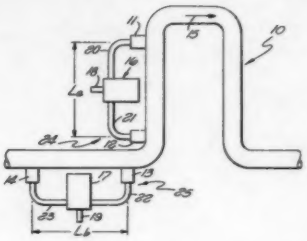
the remaining two dielectric spaces being open to receive varying levels of fluid thereby forming with their respective capacitive plate areas and fluid within said spaces two capacitors of variable capacitive value.

4,417,474

DENSITOMETER

Peter P. Elderton, Fountain Valley, Calif., assignor to ITT, New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,662
Int. Cl.³ G01N *9/26*
U.S. Cl. 73—438 **13 Claims**



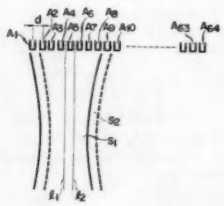
1. A densitometer comprising: a piperline having a vertical portion and a horizontal portion; first means for producing a first electrical output signal proportional to the difference between the pressures at two different respective elevations in said vertical portion; second means for producing a second electrical output signal proportional to the difference between the pressures at two different respective locations along the length of said horizontal portion inside thereof; third means for producing a third electrical output signal proportional to the difference between the magnitudes of said first and second electrical output signals, said third means including an electrical analog adder-subtractor; and utilization means connected to receive said third electrical output signal.

4,417,475

ULTRASONIC DIAGNOSING APPARATUS

Takahisa Okazaki, Otawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 24, 1981, Ser. No. 247,153
Claims priority, application Japan, Mar. 29, 1980, 55-40708
Int. Cl.³ G01N *2900*
U.S. Cl. 73—606 **10 Claims**



1. An ultrasonic diagnosing apparatus comprising:

a probe means for radiating a plurality of ultrasonic wave beams toward a target from which an ultrasonic echo data is reflected;

means for controlling said probe means to radiate a plurality of consecutive, spaced ultrasonic wave beams in predetermined ultrasonic field patterns in which each wave beam has substantially the same ultrasonic intensity distribution including a wave beam axis and in which the wave beam axis of a wave beam is spaced from the wave beam axis of the adjacent wave beam by a pre-selected distance, whereby the intensity level of the ultrasonic echo data reflected from the target is maximum for the wave beam

having a wave beam axis which is the smallest lateral distance from the target and the intensity level of the ultrasonic echo data reflected from the target corresponding to the other wave beams becomes progressively lower, by multiples of decreasing correlation coefficients, as the lateral distance between the target and the wave beam axes of the respective wave beams increases;

means for converting the ultrasonic echo data reflected from the target into electrical signals indicative of a tomogram of the target;

means for processing the electrical signals representing the reflected ultrasonic echo data and correcting the tomogram by eliminating signal components of the tomogram which are correlation coefficient-multiplied signals;

means for displaying a corrected tomogram of the target in response to output signals of said processing means; and

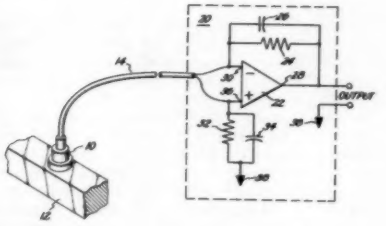
means for generating and supplying a system synchronizing pulse to said controlling means and said processing means.

4,417,476

CHARGE CONVERTER FOR VIBRATION MONITORING INSTRUMENTATION

William K. Knowlton, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,468
Int. Cl.³ G01H *1/00*
U.S. Cl. 73—660 **7 Claims**



1. Apparatus for monitoring mechanical vibrations in a component part of an operating machine under conditions producing severe electrical interference, comprising:

a transducer affixed to said component part and responsive to said vibrations to generate a first signal, in the form of electrical charge, characteristic of said vibrations;

a charge converter network, located within the machine but relatively remote from said transducer, for converting said first signal from the electrical charge form to a voltage and current signal characteristic of said vibrations, said converter including an operational amplifier having an output port, an inverting input port, and a non-inverting input port; a first resistor and capacitor pair connected in parallel between the inverting input port and the output port; and a second resistor and capacitor pair connected in parallel between the non-inverting input port and a common connection point; and wherein

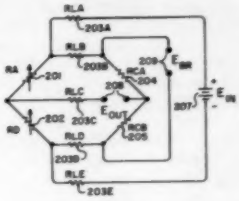
said first signal is applied between said inverting input port and said non-inverting port to produce said voltage and current signal at said output port substantially free of electrical interference.

4,417,477

TRAIN GAGE MEASUREMENT CIRCUIT FOR HIGH TEMPERATURE APPLICATIONS USING HIGH VALUE COMPLETION RESISTORS

Ronald I. Poff, West Covina, Calif., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 11, 1981, Ser. No. 259,563
Int. Cl.³ G01B *7/18*
U.S. Cl. 73—766 **3 Claims**



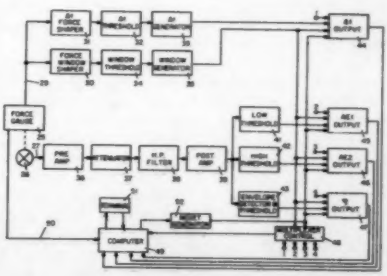
1. A bridge circuit for a strain gage of the type having an active, a dummy, and two completion resistors wherein one terminal of the active and the dummy resistors are joined at a first junction, and one terminal of each of the completion resistors are joined at a second junction, the remaining terminals of the active and dummy resistors are each separately connected to one of the unconnected terminals of one of the completion resistors, at a third and fourth junction, respectively, power being supplied to bridge across the third and fourth junctions and output voltage being measured across the first and second junctions, said bridge circuit being characterized in that the resistance of the completion resistors substantially exceeds the value of any other resistance in the bridge circuit.

4,417,478

METHOD FOR DETERMINING LEAD FRAME FAILURE MODES USING ACOUSTIC EMISSION AND DISCRIMINANT ANALYSIS TECHNIQUES

Min-Chung Jon, East Windsor Township, Mercer County; Vito Palazzo, Hamilton Township, Mercer County, and George W. Sturm, Ewing Township, Mercer County, all of N.J., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Nov. 30, 1981, Ser. No. 325,940
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—801 **10 Claims**



1. A destructive testing method for determining the failure mode of articles, bonded together, comprising the steps of:

applying a destructive pulling force to one of the bonded articles;

measuring at least one variable associated with the destruc-

tive test, the variable being selected from a group comprising:

(a) first acoustic emission signals emanating from the bonded articles during the destructive test and having amplitudes above a first threshold,

(b) second acoustic emission signals emanating from the bonded articles during the destructive test and having amplitudes above a second threshold,

(c) elapsed time until failure,

(d) number of acoustic emission bursts above said first threshold during the destructive test, and

(e) peak load applied to the bonded articles until failure;

incorporating said at least one measured variable into a plurality of predetermined discriminant functions, each one of said discriminant functions corresponding to one failure mode of a plurality of failure modes; and

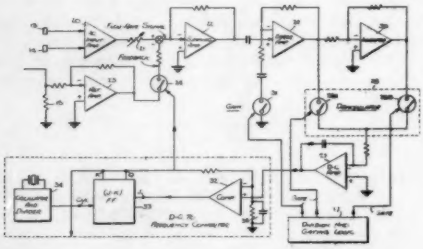
selecting out of said plurality of discriminant functions the discriminant function having the highest value thereby determining the corresponding failure mode of the articles.

4,417,479

ELECTROMAGNETIC FLOWMETER SYSTEM HAVING A FEEDBACK LOOP

Roy F. Schmoock, Yardley, and Herbert A. Shauger, Doylestown, both of Pa., assignors to Fischer & Porter Company, Warminster, Pa.

Filed Sep. 1, 1981, Ser. No. 298,457
Int. Cl.³ G01F 1/60
U.S. Cl. 73—861.16 **7 Claims**



1. An electromagnetic flow-meter system comprising:

A a primary provided with a flow tube through which the fluid to be metered flows to intersect a magnetic field established by an electromagnet excited by a low-frequency drive current which also passes through a resistor to produce a reference voltage that depends on the intensity of the magnetic field, the flowing fluid inducing a signal in the tube electrodes whose amplitude depends on the flow rate of the fluid; and

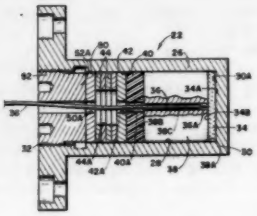
B a secondary to measure the ratio of the signal to the reference voltage, said secondary including a summing amplifier to whose input is applied said signal and the reference voltage, a demodulator coupled to the output of the summing amplifier, and yielding a d-c output, and a feedback loop between the demodulator output and the input to the summing amplifier, the loop including a converter to charge the d-c output of the demodulator into pulses of constant width and having a frequency which varies with the flow rate of the fluid, and means a pulse-modulate the reference voltage applied to the input of said summing amplifier with the variable frequency pulses, said pulses having a duty cycle that is sufficient to cancel the signal applied to the input of said summing amplifier whereby the pulse-modulated reference voltage is equal in magnitude and opposite in phase to the input signal and the resultant pulse frequency is accurately indicative of the flow rate.

4,417,480

DAMPENED ULTRASONIC TRANSDUCER

Ellis M. Zacharias, Jr., Tulsa, Okla., assignor to Mapco, Inc., Tulsa, Okla.

Filed Jun. 2, 1981, Ser. No. 269,647
Int. Cl.³ G01F 1/66
U.S. Cl. 73—861.18 **5 Claims**



1. A dampened ultrasonic transducer for imparting sonic energy to or receiving sonic energy from fluid comprising:

a housing having a cylindrical cavity therein providing a closed end wall at one end and an opening in the opposite end, the housing having internal threads adjacent the open end;

a piezoelectric crystal of cylindrical dimension slightly less than the diameter of said housing cavity and of short axial length, having front and rear faces, the crystal being positioned within said housing cavity with the front face thereof contiguous to said housing closed end wall;

a cylindrical dampening member of external dimension slightly less than the diameter of said housing cavity and having a front and rear face and having an axial opening therethrough, the dampening member being positioned within said cavity with the front face thereof contiguous to said crystal rear face;

a plurality of cylindrical spring washers each of diameter slightly less than the diameter of said housing cavity and each having an axial opening therethrough, the forwardmost washer arranged to apply force against the rear face of said dampening member;

an externally threaded cylindrical plug member positioned in said housing threaded open end and having an axial opening therethrough, the plug member being threadably advanced to apply selectable force against said plurality of spring washers which, in turn, apply such selectable compressive resilient force against said dampening member to thereby maintain a selectable force of contact of said dampening member with said crystal and said crystal with said housing closed end wall; and

a conductor received in the aligned axial openings in said dampening member, said spring washers, and said plug member and being electrically secured to said crystal rear face, whereby the conductor extends externally of said housing.

4,417,481

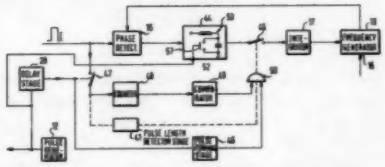
APPARATUS FOR MEASURING THE SPEED OF FLOW OF A FLOWABLE MEDIUM BY DETERMINING THE TRANSIT TIME OF SOUND WAVES THEREIN

Gerhard Krause, Rosenheim, Fed. Rep. of Germany, assignor to Erwin Sick GmbH Optik-Elektronik, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 200,166, Oct. 24, 1980, Pat. No. 4,389,899. This application May 1, 1981, Ser. No. 259,401
Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016968
Int. Cl.³ G01F 1/66
U.S. Cl. 73—861.28 **16 Claims**

1. Apparatus for measuring the speed of flow of a flowable medium by determining the transit time of sound waves therein wherein first and second sound transmitter/receivers in the

form of electroacoustic converters are spaced apart in the medium with an imaginary line joining said first and second transmitter/receivers having a component in the direction of the flow to be measured, and wherein sound pulses of predetermined length are alternately transmitted in a first direction from said first transmitter/receiver to said second transmitter/-receiver and in a second direction opposite to said first direction from said sound/transmitter/receiver to said first transmitter/receiver, said sound pulses being converted into electrical measuring pulses on arrival at said transmitter/receivers, there being processing circuitry for processing electrical measurement pulses to determine the speed of flow from the transit times of the sound pulses in said first and second directions, said processing circuitry comprising controllable frequency generator means for generating first and second frequencies related to said transit times, and operating to process only electrical measurement pulses arriving within a predetermined interval defining the expected time of arrival of a measuring pulse, and having prevention means for excluding measurement pulses, or signals derived therefrom, from further processing if at least one of the following conditions applies:



(a) more than one electrical measurement pulse arrives in said predetermined interval,

(b) no measurement pulse arrives in said predetermined interval,

(c) the electrical measurement pulse exceeds a predetermined length,

(d) the electrical measurement pulse falls short of a predetermined length,

wherein said prevention means comprises intermediate store means connected to said controllable frequency generator means for temporarily storing control signals, main switch means disposed between said intermediate store means and said controllable frequency generator means, and means for closing said switch means after the expiry of said predetermined interval, in order to pass control signals stored in said intermediate store means to said controllable frequency generator means, but for keeping said switch means open if at least one of the conditions (a) to (d) applies.

4,417,482

DIAPHRAGM MOUNTED GEAR DRIVE DETUNER

Ronald A. Witt, Milwaukee, Wis., assignor to The Falk Corporation, Milwaukee, Wis.

Filed Feb. 8, 1982, Ser. No. 346,741

Int. Cl.³ F16H *55/18, 55/00, 55/14*

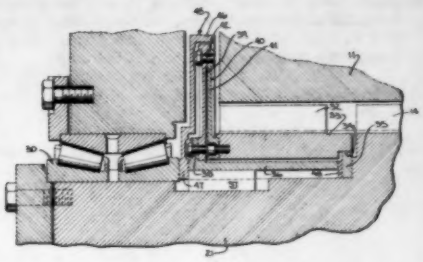
U.S. Cl. 74—409 **6 Claims**

1. A detuner for a gear drive including a helical driven gear and a helical pinion which idles in mesh with the driven gear, comprising:

a detuner pinion having helical teeth in mesh with the driven gear and disposed at one end of said helical pinion;

a ring coaxial with said helical pinion and supporting the end of said detuner pinion adjacent said helical pinion; and

a diaphragm assembly including two thin wall diaphragm discs disposed transverse to the axis of the helical pinion and being joined together adjacent their outer perimeters, one of said discs being operatively connected to said



helical pinion and the other disc being connected to the other end of said detuner pinion to support such other end.

4,417,483

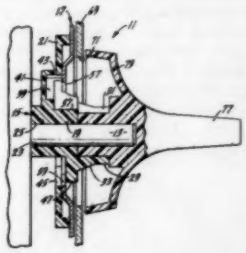
CALIBRATABLE DIAL

Robert K. Howie, Jr., Decatur, Ill., assignor to The Grigoleit Company, Decatur, Ill.

Filed Nov. 27, 1981, Ser. No. 325,326

Int. Cl.³ G05G *1/10*

U.S. Cl. 74—553 **4 Claims**



1. A calibratable dial for mounting on a control shaft, said dial including:

a hub and a skirt frictionally fastened to each other for rotational movement in unison,

the hub having a generally cylindrical portion and a disc portion,

a shaft receiving socket formed in the generally cylindrical portion of the hub,

a cental opening formed in the skirt and sized to fit over and receive the generally cylindrical portion of the hub when the skirt and hub are frictionally fastened to each other,

an arcuate toothed sector formed in the skirt along one portion of the central opening of the skirt at a location overlying the disc portion of the hub, and

an instrument receiving socket formed in the hub in alignment with the central opening in the skirt and positioned to extend under the arcuate toothed sector of the central opening of the skirt so that an instrument inserted in the socket will engage the hub and the toothed sector of the skirt and upon twisting will overcome the frictional engagement between the hub and skirt to rotate them relative to each other through a limited arcuate extent.

4,417,484
PLANETARY CHANGE-SPEED TRANSMISSION FOR AUTOMOTIVE VEHICLES

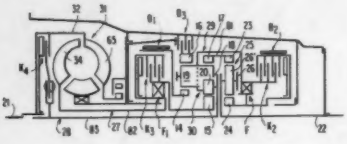
Hermann Gaus, Stuttgart; Wolfgang Zaiser, Steinheim-Sontheim; Jürgen Pickard, Wernau, and Georg Eltze, Stuttgart, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Nov. 7, 1980, Ser. No. 204,900

Claims priority, application Fed. Rep. of Germany, Nov. 7, 1979, 2944884

Int. Cl.³ F16H *47/68, 57/10*

U.S. Cl. 74—688 **22 Claims**



1. A change-speed transmission for a motor vehicle, the transmission comprising a plentary gear transmission means having a plurality of transmission members including a pair of sun gears, a pair of ring gears, and a double-webbed planetary gear carrier means supporting at least one primary planet gear meshing with one of the sun gears and at least one secondary planet gear meshing with the primary planet gear and the other of said sun gears, means for respectively fixedly braking one of the sun gears and one of the ring gears, means for drivingly connecting one of the sun gears to an input shaft of the transmission, and means for enabling the planetary gear carrier means to act upon an output shaft of the transmission, characterized in that the primary planet gear meshes with both of the ring gears, the enabling means includes a planetary gear coupling transmission means having a first transmission member, means are provided for bringing one of the ring gears and the planetary gear carrier means respectively into driving connection with the first transmission member and the input shaft, and in that a further transmission member of said plurality of transmission members of the gear coupling transmission means is connected to the output shaft.

4,417,485
COUPLED PLANETARY GEAR SPEED REDUCER FOR USE IN INDUSTRIAL VEHICLES

Frank H. Boor, Fort Meyers, Fla., assignor to Fairfield Manufacturing Co., Inc., Lafayette, Ind.

Continuation-in-part of Ser. No. 73,391, Sep. 7, 1979, abandoned. This application Feb. 19, 1981, Ser. No. 235,773

Int. Cl.³ F16H *3/44*

U.S. Cl. 74—785 **4 Claims**

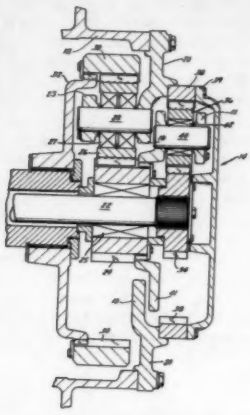
1. In a vehicle having a speed reduction planetary gear drive system located adjacent a wheel assembly housing rotatably mounted on an axle, said gear system comprising:

(a) a frame extension fixedly secured to the vehicle;

(b) a rotatable input shaft means extending from a source of rotary power and being capable of high speed rotation;

(c) a secondary planetary gear drive comprising a secondary sun gear mounted rotatably with respect to said input shaft means, a group of secondary planet gears each rotatably mounted on a shaft secured to the wheel assembly housing, and a secondary ring gear fixedly secured to the frame extension; and

(d) a primary planetary gear drive positioned outwardly from said secondary gear drive and having a primary sun gear fixedly secured to and for rotation with said input shaft, a primary ring gear rotatable with respect to said frame extension and secured to said wheel assembly housing, and a group of primary planet gears driving said



secondary sun gear and rotatably mounted between said primary sun gear and said primary ring gear.

4,417,486
APPARATUS FOR ANGULARLY POSITIONING

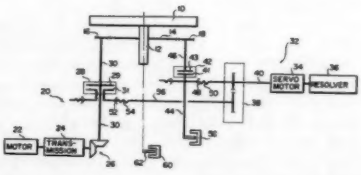
Yoshihiro Tsukiji; Haruo Maeda, both of Komatsu, and Mikio Araki, Kaga, all of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 14, 1981, Ser. No. 254,268

Claims priority, application Japan, Apr. 23, 1980, 55-52847

Int. Cl.³ B23Q *17/00;* B23B *29/24*

U.S. Cl. 74—813 R **5 Claims**



1. An apparatus for angularly positioning a rotary member, comprising:

first drive means connectible to rotate said rotary member in a work operation;

power transmission means operable to connect said first drive means with said rotary member for rotating said rotary member in a work operation;

second drive means connectible to rotate said rotary member in an angular positioning movement;

coupling means actuatable to connect said second drive means to said rotary member for rotating said rotary member while said first drive means is disconnected from said rotary member, said coupling means including a pair of complementary clutch members adapted to be engageable at a predetermined single position and normally biased to a disengaged position relative to each other;

first detector means for detecting a predetermined angular reference position of one of said clutch members which is positioned to the side of said second drive means and generating a signal upon detection;

a controller responsive to the signal of said first detector means for controlling the movement of said second drive

means so as to stop said one clutch member at said predetermined angular reference position; and

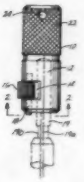
second detector means for detecting a predetermined angular position of said rotary member and allowing the other clutch member to engage with said one clutch member at said predetermined single position upon detection of the predetermined angular position of said rotary member, said second detector means being operated by the rotary movement of said rotary member when the same is being rotated by said first drive means.

4,417,487

TOOL FOR CLEANING OR CHANGING MIG-CONTACT-TIPS

Vernon E. Stephens, 7422 Cherokee Dr., Downey, Calif. 90241

Filed Jan. 15, 1982, Ser. No. 339,392
Int. Cl.³ B25B *13/50*
U.S. Cl. 81—53.2 **2 Claims**



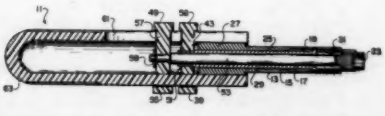
1. A tool for cleaning or changing MIG contact tips comprising a handle member having a cylindrical bore therein and an aperture in a side wall communicating with the cylindrical bore, a shaft extending parallel with respect to the cylindrical bore and across the aperture, a rotatable member eccentrically mounted on the shaft and having teeth for adjustably engaging the side of the contact tip when a contact tip is inserted into the cylindrical bore, and an annular insert concentrically located in the outer end of the cylindrical bore having teeth for cleaning splatter from the side of the contact tip when a contact tip is inserted into the cylindrical bore, wherein the handle member is of cylindrical shape and wherein the axis of the cylindrical bore in the handle member is offset from the cylindrical axis of the handle member on the side opposite said shaft and the rotatable member, thereby causing the handle member to provide eccentric movement when the handle member is rotated about a contact tip.

4,417,488

TELESCOPING NUT DRIVER

Samuel Gentry, La Mesa, Calif., assignor to Paul W. Green and Wayne R. Green, both of San Diego, Calif., part interest to each

Continuation-in-part of Ser. No. 159,765, Jun. 16, 1980, Pat. No. 4,307,634. This application Jun. 5, 1981, Ser. No. 267,801
Int. Cl.³ B25B *13/58*
U.S. Cl. 81—185 **8 Claims**



1. A telescoping hexagonal nut driver tool having a plurality of hexagonally shaped heads, each forming a socket of a different size and adapted to engage correspondingly sized hexagonal nuts for driving said nuts by rotational movement, comprising:

a first hexagonal socket means having a hollow shank;

a cylindrical handle surrounding a portion of said shank on said first socket means, said handle having an axial slot open at the forward end and notch means in the side of said slot;

a second hexagonal socket means smaller than said first hexagonal socket means for positioning within said first socket means in sliding engagement with the inner side walls of said first socket means, said second socket means having a shank and telescoping outwardly beyond said first socket means;

a first circular positioning means in sliding engagement on said handle with a neck extending through said handle slot behind said first socket means shank;

an inner ring on said neck and having an opening in the center thereof for surrounding said second socket means shank;

retaining means for retaining said inner ring on said second socket means shank for preventing axial movement and permitting rotational movement of said ring on said shank for seating said neck in said notch means;

a third hexagonal socket means smaller than said second hexagonal socket means for positioning within said second socket means in sliding engagement with the inner side walls of said second socket means, said third socket means having a shank and telescoping outwardly beyond said second socket means;

a second circular positioning means in sliding engagement on said handle with a neck extending through said handle slot behind said second socket means shank;

an inner ring on said neck and having an opening in the center thereof for surrounding said second socket means shank; and

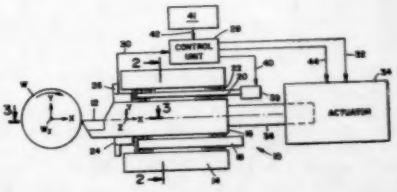
retaining means for retaining said inner ring on said second socket means shank for preventing axial movement and permitting rotational movement of said ring on said shank for seating said neck in said notch means.

4,417,489

METHOD AND APPARATUS FOR MACHINING A WORKPIECE BY VARYING THE TOOL GEOMETRY

Chunghorng R. Liu, 212 Pawnee Dr., W. Lafayette, Ind. 47906

Filed Dec. 21, 1979, Ser. No. 106,150
Int. Cl.³ B23B *3/00, 29/00*
U.S. Cl. 82—1 C **27 Claims**



1. A method of machining a workpiece with a cutting tool, comprising:

(a) placing the tool in a tool holder, the tool then having a tool geometry with respect to the workpiece;

(b) cutting the workpiece with the tool in the tool holder; and

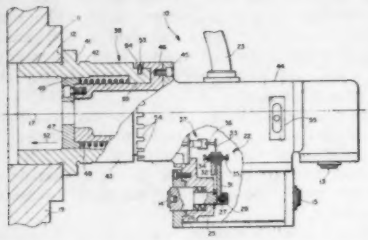
(c) varying the tool geometry to sense tool wear.

4,417,490

LATHE TOOL CALIBRATOR AND METHOD

Minoru Mochizuki, Indianapolis, Ind., assignor to Hurco Mfg. Co., Inc., Indianapolis, Ind.

Filed Jun. 9, 1981, Ser. No. 272,022
Int. Cl.³ B23B 1/00, 7/00
U.S. Cl. 82—2 B 16 Claims



12. A method for determining relative position of a cutting tool on a numerical control lathe, comprising the steps of:

(a) chucking a surface on a gauge head in a workpiece holder on the lathe, the gauge head including a plurality of surfaces for contacting a cutting edge on the tool and sensing means for detecting the contacts and relaying the contacts to the numerical control circuitry of the lathe for automatically determining the position of the tool cutting edge; and

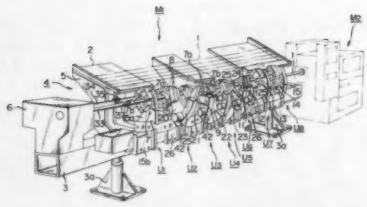
(b) bringing the cutting edge of the tool into contact with a contact surface on the gauge head, the tool being mounted in a tool holder on the lathe.

4,417,491

AUTOMATIC BAR MATERIAL FEEDING APPARATUS

Sukehiro Uehara, Ueda, and Akio Saiki, Sakaki, both of Japan, assignors to Kabushiki Kaisha Miyano Tekkosho and Kabushiki Kaisha Alps Tool, both of Nagano, Japan

Filed Mar. 15, 1982, Ser. No. 358,408
Claims priority, application Japan, Mar. 23, 1981, 56-41883
Int. Cl.³ B23B 15/00
U.S. Cl. 82—2.7 4 Claims



1. In an apparatus for automatically feeding into a machine tool bar stock material for machining thereof, the apparatus having: a stock table for holding thereon a number of bars; openable and closeable bearing means; means for supplying the bars, one at a time, from the stock table to the bearing means to be rotatably borne thereby in coaxial alinement with the main spindle of the machine tool, the bearing means extending from one end to the other end thereof over most of the length of the bar thus borne; and a feed pipe with a feed chuck for gripping the end remote from the machine tool of the bar thus borne and successively feeding the bar into the machine tool as the machining progresses, the bearing means comprising a plurality of bearing clamps disposed sequentially at intervals along the borne bar and each comprising a pair of openable and closeable clamping jaws each having an endless belt rotatably supported on rotatable pulleys, the borne bar being elastically clamped between the two belts of the clamping jaws of each bearing clamp, the improvement comprising:

a first mechanism provided for each bearing clamp for varying the angular position of the clamp about the borne bar and functioning to cause the directions of the clamping forces of the bearing clamps on the borne bar to be respectively different; and

a second mechanism for opening and closing the clamping jaws of each bearing clamp and functioning so that, as the feed chuck advances, the bearing clamps successively approached thereby are successively opened to release the bar,

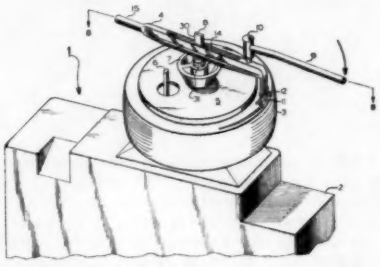
the first and second mechanisms being unitized for each bearing clamp.

4,417,492

APPARATUS FOR CUTTING USED TIRES

John E. Winecoff, Rte. 1, Box 861, Rockwell, N.C. 28138

Filed Sep. 8, 1981, Ser. No. 300,009
Int. Cl.³ B23B 5/14
U.S. Cl. 82—46 6 Claims



1. An apparatus for cutting tire casing having sidewalls and a tread portion comprising:

(a) a base member;

(b) first and second upstanding shafts supported by and connected to said base and means for rotatably supporting said first shaft;

(c) first and second plates, each having a center hole through which said first shaft is disposed and upstanding teeth for grasping the tire casing sidewalls, said first plate having an off-center hole therein in which said second shaft is received and thereby interlocked therewith and an upstanding member affixed thereto on the same side the teeth are so affixed; and,

(d) a cutter bar and a means thereon for affixing same to said first shaft.

4,417,493

METHOD FOR CUTTING OFF STEEL PLATE

Chiaki Ohuchi; Yoji Kohsaka, and Hiroyoshi Suenaga, all of Yokohama, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 7, 1981, Ser. No. 251,729
Claims priority, application Japan, Apr. 28, 1980, 55-56983
Int. Cl.³ B26D 7/10
U.S. Cl. 83—15 5 Claims

1. A method for cutting off a steel plate, comprising:

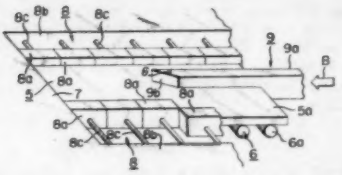
heating a steel plate to a temperature within the range of from 950° to 1,400° C. at the time of cutting off the thus heated steel plate, said steel plate having side edges and opposing faces;

placing said heated steel plate on a roller table extending

horizontally with said opposing faces extending horizontally; and then

cutting off said heated steel plate by means of a cutting knife having a cutting edge, the cutting edge angle of said cutting knife being within the range of from 10° to 45°;

said cutting off step comprising moving one of said cutting knife and heated steel plate relative to the other of said



cutting knife and heated steel plate, in the horizontal direction and substantially perpendicular to one of said side edges of said heated steel plate, such that said cutting edge cuts through said steel plate at a cutting speed of from 10 to 1,000 cm/minute;

thereby cutting off said heated steel plate in the horizontal direction by means of said at least one cutting knife.

4,417,494

AUTOMATIC PERFORMING APPARATUS OF ELECTRONIC MUSICAL INSTRUMENT

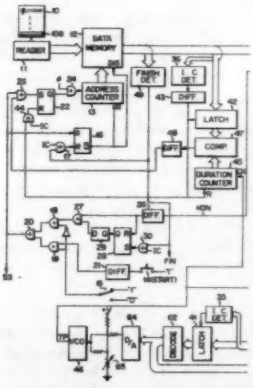
Akira Nakada, Hamamatsu; Eisaku Okamoto, Hamakita, and Kiyoshi Yoshida, Hamamatsu, all of Japan, assignors to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu, Japan

Filed Sep. 21, 1981, Ser. No. 304,009

Claims priority, application Japan, Sep. 19, 1980, 55-130139

Int. Cl.³ G10F *1/00*

U.S. Cl. 84—1.03 **2 Claims**



1. An automatic performing apparatus of an electronic musical instrument comprising:

memory means for storing performance data read out from a recording medium external to said performing apparatus, said data representing a progression of music to be played and comprising pitch sub-data representing pitches of notes of said music, duration sub-data representing durations of said notes and control sub-data for controlling a generation mode of the music to be played which pertains to at least one of a tone color, a modulation effect, a rhythm and a tempo, said sub-data each having an identifying code which distinguishes between the respective sub-data wherein said control sub-data is stored at memory locations which allows the control sub-data to be read out from said memory means only at a time when the tone generation mode is to be changed;

read-out means for successively reading out the performance data from said memory means in accordance with the progression of the music wherein said read-out means comprises means responsive to said identifying code for distinguishing the respective sub-data in the performance data and means responsive to the duration sub-data of each note to read out the pitch sub-data of the next note every time the duration of each note lapses after the pitch sub-data is read out;

first latch means for latching the pitch sub-data and the duration sub-data both read out from said memory means, the sub-data latched in the first latch means being updated every time new pitch sub-data and new duration sub-data are read out from memory means;

second latch means for latching said control sub-data read out from said memory means, the control sub-data latched in the second latch means being updated only when the generation mode of the music is changed;

tone signal generating means for generating musical tone signals in response to the pitch sub-data and the duration sub-data latched in said first latch means; and

means for controlling the generation mode of the music in response to the control sub-data latched in said second latch means.

4,417,495

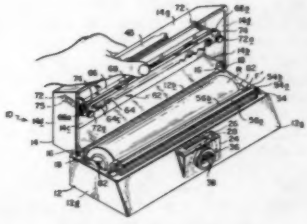
WEB DISPENSER

Marc J. Gordon, Boston, Mass., and Stanley Ruff, New Rochelle, N.Y., assignors to RGG, Inc., Boston, Mass.

Filed Feb. 12, 1982, Ser. No. 348,515

Int. Cl.³ B26D *7/14*; A47K *10/36*

U.S. Cl. 83—175 **12 Claims**



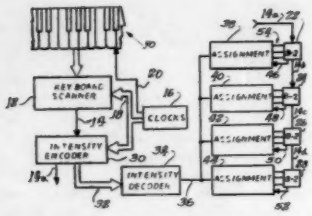
1. In a web dispenser of the type having a roll container, means in the container for rotatively supporting a web roll, a swing-down cover hinged to the container, shelf means positioned just inside the front wall of the container extending substantially the entire length thereof, a long lateral gap formed in the shelf, a knife blade mounted in the cover adjacent the front wall thereof, said knife blade extending parallel to said gap and being of commensurate length, and a retractable sheath engaged under the knife blade, said sheath being movable between an extended position wherein it conceals the knife blade edge and a retracted position wherein it exposes said edge, characterized in that the sheath is constructed of a flexible resilient material and is downwardly bowed so that, when the cover is swung down toward said container, the sheath engages the shelf at the midportion thereof and then flexes so that it engages the shelf at points therealong progressively further away from the midportion by a rolling clamping action until, when the cover is almost fully closed, the sheath engages the shelf along substantially its entire length and is urged thereby to its retracted position whereby the blade edge projects into the shelf gap after cutting any web draped across the shelf.

4,417,496

VELOCITY SENSITIVE KEYER CONTROL CIRCUIT FOR AN ELECTRONIC MUSICAL INSTRUMENT

William V. Machanian, DeKalb, Ill., assignor to The Wurlitzer Company, DeKalb, Ill.

Filed Jun. 15, 1981, Ser. No. 273,627
Int. Cl.³ G10H 1/02
U.S. Cl. 84—1.27 16 Claims



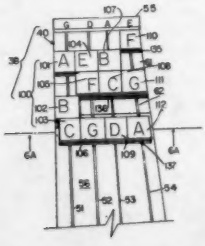
1. In an electronic musical instrument having a multiplexed keyboard, a plurality of assignable tone generating means, each being assignable to produce a single note of one or more notes corresponding to one or more actuated keys of said keyboard and keying means associated with each tone generating means for keying the generated tone with controlled attack time and decay rate and a controllable peak amplitude, a peak amplitude control system responsive to the intensity of actuation of each key for keying the associated tone with a peak amplitude corresponding to said intensity and comprising: a single encoding means common to all of the keys of said keyboard and responsive to the intensity of actuation of each actuated key for producing an encoded intensity signal corresponding to said intensity of actuation, a single decoding means common to all of said tone generators and responsive to each encoded intensity signal for producing a corresponding analog peak amplitude control signal, memory means for storing the peak amplitude control signal, gate means connected to said memory means, and assigning means interconnected with said tone generating means and responsive to the assignment of a given tone generator for production of a note corresponding to an actuated key for operating said gate means to gate the corresponding peak amplitude control signal to said given tone generator at the onset of attack for controlling the peak amplitude of the note keyed thereby in accordance with the intensity of actuation of the corresponding key.

4,417,497

STRINGED MUSICAL INSTRUMENT TEACHING DEVICE AND PROCESS

Helen C. Nicklaus, 4308 Charles, Amarillo, Tex. 79106

PCT No. PCT/US80/00647, §371 Date Jun 9, 1980, §102(e) Date Jun. 9, 1980. This PCT application filed June 9, 1980, Ser. No. 252,973
Int. Cl.³ G09B 15/08
U.S. Cl. 84—485 R 10 Claims



1. A teaching device for stringed musical instruments used by a player thereof to identify, practice and make changes between notes of scales of different keys, comprising a simulated fingerboard and a set of structurally like note index units,

the fingerboard comprising a rigid elongated support surface having a length and a width, with magnetically permeable members extending along the length of said surface and said magnetically permeable members are spaced apart from each other along a direction extending across the width of said support surface,

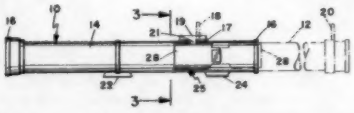
said note index units of said set each comprising an upper rigid panel and a lower magnetic element, each said lower magnetic element having a lower surface that matches the upper surface of said support surface and each said upper panel having a greater length than said lower surface and spaced therefrom, said upper surface bearing musical note indicia.

4,417,498

FIRING MECHANISM FOR ROCKET LAUNCHERS

Dean E. Dissmeyer, Claremont, and David F. Mohlman, Fullerton, both of Calif., assignors to General Dynamics, Pomona Division, Pomona, Calif.

Filed Sep. 14, 1981, Ser. No. 301,610
Int. Cl.³ F41F 3/04
U.S. Cl. 89—1.814 8 Claims



1. A firing mechanism for an operator-portable rocket launcher having a battery, activated by a percussion primer, for arming and igniting a rocket loaded within said launcher, comprising:

a housing attachable to a launcher,

a housing cover pivotably mounted on said housing,

firing means for storing the energy needed to activate a battery when said housing cover is opened,

trigger means for releasing the energy stored in said firing means,

sear means comprising a spring biased pivotable sear for restraining the release of the energy stored in the firing means until said sear is rotated by the trigger means,

switch means in cooperative relationship with said trigger means for electrically isolating the output of said battery until the operation of said trigger means,

repositionable safety means for simultaneously blocking the operation of said trigger means and said firing means in a first position, and permitting the operation of said trigger means and said firing means in a second position.

4,417,499

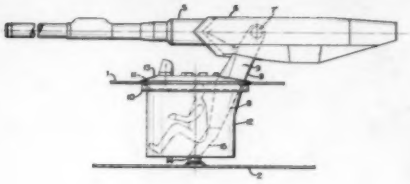
WEAPON MOUNT FOR ARMORED VEHICLE

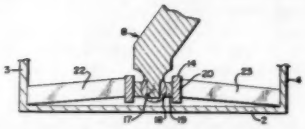
Heinrich Grosser; Hermann Dierkes, both of Vellmar; Hubertus Lütke, Lohfelden, and Klaus Schreckenberg, Kassel, all of Fed. Rep. of Germany, assignors to Thyssen Industrie Aktiengesellschaft, Essen, Fed. Rep. of Germany

Filed Dec. 16, 1975, Ser. No. 577,210
Int. Cl.³ F41F 23/06
U.S. Cl. 89—36 K 11 Claims

1. In an armored vehicle including a turret, a large diameter azimuth bearing having its outer race mounted in the roof of said vehicle and its rotatable inner race connected to and supporting the roof of said turret to provide for azimuth alignment of said turret, a weapon having a pair of trunnions extending from opposite sides thereof, and a weapon mount on said vehicle for supporting said weapon above said vehicle so that said weapon is adjustable both as regards azimuth and elevation, the improvement wherein: a support bearing which

is coaxial with said azimuth bearing is disposed adjacent the floor of said vehicle; said support bearing is a ball joint bearing; means are provided for supporting said ball joint bearing a small distance above said floor of said vehicle to provide a gap therebetween, said means including a plurality of laterally extending support arms which are connected to said ball joint bearing and bear against the side walls of said vehicle; said weapon mount has a pair of trunnion arms at its upper end which engage the respective trunnions of said weapon, whereby said weapon is adjustable about the elevation axis;





said trunnion arms are joined at their lower ends to form a one piece lower end for said weapon mount; said weapon mount extends through said turret roof into said turret, is connected to said rotatable inner race of said azimuth bearing for rotation therewith, and has its said lower end supported on said support bearing whereby said weapon mount is adjustable about the azimuth axis; and, the portion of said weapon mount disposed between said azimuth bearing and said support bearing is non-coaxial with the rotational axes of said bearings and generates a surface of revolution when the turret and weapon are rotated about said rotational axes.

4,417,500

AIR PRESSURE SERVOMOTOR

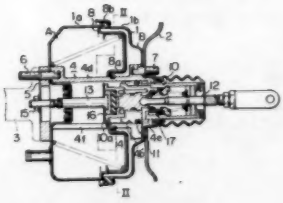
Yoshihiro Hayashida, Kawasaki, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed May 31, 1979, Ser. No. 44,104

Claims priority, application Japan, May 31, 1978, 53-65493

Int. Cl.³ F15B *9/10*; F01B *19/00*; F16J *3/02*

U.S. Cl. 91—369 A **12 Claims**



1. A brake booster for a braking system comprising a housing having first and second spaced opposing housing walls, a movable wall disposed in the housing between said spaced housing walls and dividing said housing into two chambers, axially aligned input and output members, means interconnecting said movable wall to said output member, a control valve assembly operated by said input member for controlling a pressure differential across said movable wall, a tubular member extending through the movable wall coaxially with the input and output members and connected to the opposing housing walls, said tubular member having longitudinal slot means disposed between said opposing housing walls with a portion of the interconnecting means extending through the slot means, said control valve assembly including a valve body slidably disposed within said tubular member.

4,417,501

STEERING BOOSTER SYSTEM

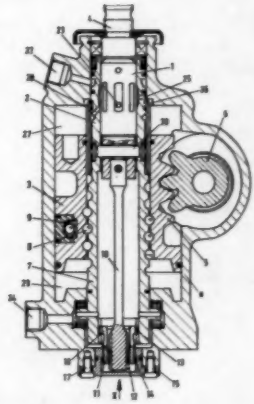
Dieter Elser, Essingen, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG, Friedrichshafen, Fed. Rep. of Germany

Filed Jul. 15, 1981, Ser. No. 283,470

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028176

Int. Cl.³ F15B *9/10*

U.S. Cl. 91—375 A **20 Claims**



1. In a hydraulic booster steering system for motor vehicles having a housing (H) with a control valve therein comprising a rotary valve plug (1) encompassed by a valve sleeve member (2) wherein said rotary valve plug and valve sleeve member have relative rotation in opposite directions from a neutral position up to a predetermined limit and have coacting flow control grooves for pressure and exhaust of a servomotor having a piston (3) operative for vehicle wheel steering and intermediate pressure chambers (27, 29); including a torque rod member (10) having one end fixedly connected to the rotary valve plug with the other end having a connection (7, 11) to the valve sleeve member;

the improvement wherein the connection between said other end of said torque rod member and said valve sleeve member comprises a coupling sleeve (11);

said coupling sleeve having a cam means connection (13) with one of said members and a sliding guide connection (12) with the other of said members:

said coupling sleeve having a threaded connection (14) with said housing;

whereby steering rotation of said rotary valve plug effects a twisting of said torque rod member at said one end during relative rotation between said rotary valve plug and said valve sleeve member up to said predetermined limit after which rotation of said valve sleeve member causes rotation of said coupling sleeve and axial movement thereof on said threaded connection to effect rotation of said coupling sleeve by said cam means and twisting of said torque rod member at said other end through said sliding guide connection in a direction opposite to the direction of

said first mentioned twisting of said torque rod member to thereby increased the stress therein so that, upon release of steering force, the unstressing of said torque rod member reverses the rotation of said rotary valve plug beyond said neutral position relative to said valve sleeve member for reversely pressurizing said servomotor for the returning of vehicle wheels to straight ahead position.

4,417,502

LOAD SUPPORTING HYDRAULIC CIRCUIT WITH EMERGENCY AUTOMATIC LOAD RESTRAINT

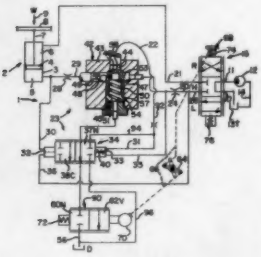
Daniel B. Shore, Niles, Ill., assignor to Dresser Industries, Inc., Dallas, Tex.

PCT No. PCT/US80/01552, § 371 Date Nov. 17, 1980, § 102(e) Date Nov. 17, 1980, PCT Pub. No. WO82/01749, PCT Pub. Date May 27, 1982

PCT Filed Nov. 17, 1980, Ser. No. 273,876

Int. Cl.³ F15B *11/08, 13/042*

U.S. Cl. 91—447 **12 Claims**



1. In a fluid circuit system comprising a fluid motor (2) for raising and supporting a load having a load supporting chamber (5) in the motor, a master directional control valve (15) for selectively communicating pressurized fluid between a pressure fluid source (10,11) and said motor in correspondence with raise, lower, and load hold positions of the valve first named, and a second load check (42) valve hydraulically disposed between the first named valve and said motor for affording free flow of fluid from the first named valve to said motor and having a normal fluid blocking position for blocking flow of fluid from said motor to the first named valve,

the improved combination with the first (15) and second (42) valves of:

service connections including a flexible transfer line (22) to carry the flow afforded by the first named valve between it and the second valve and loaded motor and essential thereto in raising, lowering, and holding the load;

said second valve having a control chamber (54) which, when vented, effects opening of said second valve to afford a routing of fluid of said load supporting chamber for its flow to and thru the flexible transfer line and which includes restriction means (55) in communication with said load supporting chamber, and said second valve being responsive to fluid pressure in said load supporting chamber to bias said second valve to said fluid blocking position thereby obstructing all flow to the flexible transfer line; and

means (34) connected to said transfer line responsive to a flow characteristic attendant with line rupture to cancel venting of said control chamber for affording fluid biasing the second valve to said fluid blocking position.

4,417,503

CYLINDER DEVICE

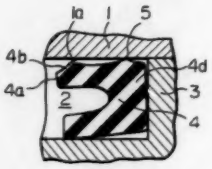
Shinichi Izumi, Yokohama, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 933,318, Aug. 21, 1978, abandoned. This application Aug. 6, 1980, Ser. No. 175,860

Claims priority, application Japan, Aug. 20, 1977, 52-111671

Int. Cl.³ F16J *9/20*

U.S. Cl. 92—240 **2 Claims**



1. A cylinder device comprising a main body having a bore, a piston slidably fitted in the bore to partition the interior of the bore into an oil space having oil therein and an air space communicating with the atmosphere, said piston having a peripheral recess therein for receiving a packing, and a U-packing or U-cup packing type seal fitted in said peripheral recess in the piston in a normally unstressed condition to seal the oil space from the air space, said seal having the open end of the U-shape facing the oil space, said seal having an annular lip on the outside of the outer leg of the seal adjacent to the oil space and the outermost portion thereof having a diameter larger than the inside diameter of said bore and engaging the inner wall of the bore in sealing relationship therewith, and an additional lip on the outside of the outer leg of the seal at a location spaced from the firstmentioned lip in the direction toward the air space and the outer periphery of said seal between said lips having a diameter less than the diameter of said bore, said seal being movable between a first position in which said seal is seated with the inner peripheral surface firmly against the outer peripheral surface of said piston in said recess, in which first position said annular lip is in sealing contact with the inner periphery of said bore and said additional lip is spaced from the inner periphery of said bore, said first position being the position of said seal when a differential pressure is present across said seal with the higher pressure on the oil space side, and a second position in which said seal is rolled toward said oil space and part of the inner periphery separates from the outer peripheral surface of said piston in said recess, in which second position said additional lip is in sealing contact with the inner periphery of said bore, said second position being the position of said seal when a differential pressure exceeding a predetermined pressure is present across said seal with the higher pressure on the air space side thereof.

4,417,504

REGULAR COFFEE SET

Noboru Yamamoto, Yokohama, Japan, assignor to Mitsumoto Coffee Co., Ltd., Japan

Filed Apr. 2, 1981, Ser. No. 250,397

Int. Cl.³ A47J *31/02*

U.S. Cl. 99—306 **1 Claim**

1. A regular coffee set, comprising:

a coffee cup having an open top, said open top having an inside diameter and an outside diameter;

a dripping container including an outer case and a dripping body spaced from said outer case to define a heat insulation area therebetween;

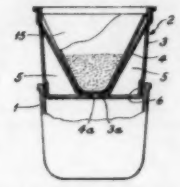
said outer case being generally cylindrical and having an open top and a first opening centrally disposed in its bottom;

said dripping body being fittable inside said outer case and

having a generally conical cross sectional shape, an open top and a second opening centrally disposed in its bottom, said second opening being aligned with said first opening;

a plurality of grooves on said dripping body effective for expediting filtering a coffee through a filter placed within said dripping body;

an outside diameter of a bottom of said outer case being supportably fittable into said inside diameter of said open top of said coffee cup;



means on said outside diameter of said bottom of said outer case effective to impart resiliency to said outer diameter for easy fitting into said inside diameter of said open top of said coffee cup;

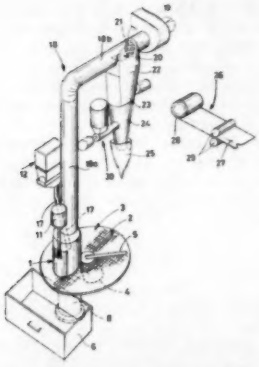
an inside of a top of said dripping container having a diameter for fitting top to top over said outside diameter of said coffee cup to function as a cap and to form a volume therein for containing supplies.

4,417,505

POP CORN PREPARING AND DISPENSING MACHINE

Silvio Pietrobelli, Via Firenze 9, Schio (Vicenza), Italy

Filed Aug. 28, 1981, Ser. No. 297,463
Claims priority, application Italy, Apr. 6, 1979, 41550 A/79
Int. Cl.³ H23L *1/18*
U.S. Cl. 99—323.6 **11 Claims**



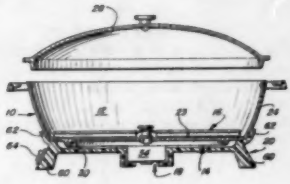
1. An automatic machine for producing and dispensing pop corn, comprising a cooking chamber, first metering means for feeding said chamber with a metered amount of corn kernels, a movable grid adapted to close said cooking chamber at the bottom, a heating resistor arranged beneath said grid, a conduit for withdrawing the ready cooked product connected at its top to said cooking chamber and opening into a temporary storage bin for the cooked product, an exhauster adapted to produce in said conduit an air stream directed towards said bin from said chamber, second metering means at the outlet of said bin for dispensing dosage units of the cooked product, salting means for salting the product as it is being dispensed, means for checking the start of cooking and consequentially actuating said exhauster, means for stopping the metered feed of corn seeds to the cooking chamber as said temporary storage bin has been filled, grid-cleaning means, and means for dispensing a no-return bag for receiving the ready cooked product as distributed by said second metering means.

4,417,506

HOME COOKING APPLIANCE

Walter B. Herbst, Evanston, and John Wolens, Chicago, both of Ill., assignors to Housewares Research Associates, Chicago, Ill.

Filed Sep. 23, 1981, Ser. No. 304,806
Int. Cl.³ A47J *27/00*
U.S. Cl. 99—348 **7 Claims**



1. A home cooking appliance comprising:

a vessel for containing food to be cooked and having a bottom wall and an upstanding side wall;

means for heating said vessel to raise food within said vessel to cooking temperatures;

an elongated stir member removably disposed within said vessel adjacent said bottom wall;

drive means for rotating said stir member in a plane parallel and adjacent to said bottom wall; and

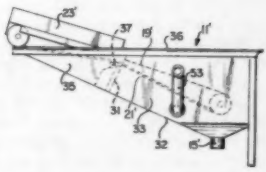
a stand to removably receive and support said vessel, said stand also housing said drive means and being configured to align said vessel and said drive means when said vessel is properly positioned within said stand.

4,417,507

SHRIMP PROCESSING SYSTEM

Jesse A. Shotwell, P.O. Box 414, Bay Center, Wash. 98527

Filed Oct. 9, 1981, Ser. No. 310,041
Int. Cl.³ A47J *27/16*
U.S. Cl. 99—352 **6 Claims**



1. An improvement for a feed tank portion of a shrimp processing apparatus, wherein the shrimp processing apparatus in operation moves raw shrimp on a feed belt or the like from the feed tank to a shrimp cooker, and from there to a shrimp peeler, the improvement comprising:

means dividing the feed tank into forward and rear sections, the rear tank section having a sufficient capacity to function as a feed tank for the shrimp processing apparatus;

means for treating the water in the rear tank section such that the water has at least one of the following characteristics: (a) a selected temperature which is lower than ambient and (b) a desired concentration of a selected chemical;

wherein the dividing means is positioned so that the liquid condensate from the shrimp cooker and substantially any

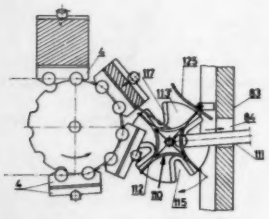
other untreated liquid runoff from the apparatus collects in the forward tank section, the liquid condensate and untreated liquid being thereby prevented from mixing with the water in the rear tank section.

4,417,508

WAFER BAKING OVEN

Franz Haas, Sr., Gerstlgasse 25, A-1210 Wien; Franz Haas, Jr., Kreuzgasse, A-2100 Leobendorf, and Johann Haas, Seitweg 4, A-3400 Klosterneuburg, all of Austria

Filed May 11, 1982, Ser. No. 376,953
Claims priority, application Austria, May 11, 1981, 2092/81
Int. Cl.³ A47J 37/00
U.S. Cl. 99—355 64 Claims



1. A wafer baking oven for making, from batter, baked wafers such as flat wafers, low hollow wafers, sugar cones, wafer cups, wafer figures and the like, the baking oven comprising:

a baking chamber defined by a thermally insulated baking chamber enclosure, the baking chamber having a front end and a rear end;

a front port adjoining the baking chamber at the front end of the baking chamber;

a plurality of baking tongs in the baking enclosure, the baking tongs being movable through the baking chamber and into and out of the front port in a running direction;

a batter pouring station and a discharge station, both located adjacent the front port, the discharge station having a discharge chute and at least one discharge spider, the batter pouring station cooperating with the baking tongs for filling the baking tongs with batter prior to movement of the baking tongs through the baking chamber, the discharge station receiving from said baking tongs, via the discharge spiders, wafers which have been baked during movement of the baking tongs through the baking chamber and discharging, via the chute, the baked wafers which have been handled by the discharge spider;

a housing enclosing the front port, the housing thereby also enclosing the discharge spider, part of the discharge chute and at least part of the batter filling station, the baking tongs being movable into and out of the housing;

the housing including a frame and a housing enclosure fastened to the frame, the housing having one side facing the baking chamber;

the housing having a pair of passage openings at said one side through which passage openings the baking tongs may pass;

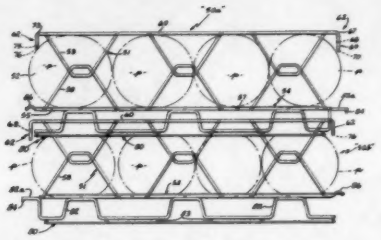
the housing also having an outlet opening through which the baked wafers discharged from the baking tongs may pass.

4,417,509

TIERABLE AND NESTABLE RECEPTACLE

Christopher J. Deibel, Rocky River, and Edward W. Massey, Parma, both of Ohio, assignors to Bliss & Laughlin Industries Incorporated, Oak Brook, Ill.

Filed Aug. 6, 1981, Ser. No. 290,439
Int. Cl.³ A22C 7/00; B30B 7/02; B65D 21/02
U.S. Cl. 99—467 6 Claims



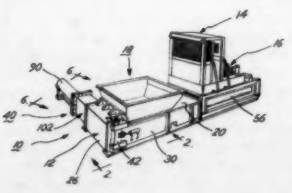
1. A receptacle of a tier or stack of like receptacles for smoke processing of meat products and the like and wherein each receptacle in the tier comprises a body of generally parallelepiped configuration having connecting side walls and end walls and a rectangular-shaped product support tray connected to the bottom edge of each said side walls, plate means disposed below said tray, bracket means attaching said plate means in spaced relation to and below said tray, said plate means being of rectangular configuration and wherein its transverse dimension is less than the transverse dimension of the tray, the end walls of said body having bar means disposed at the upper edges thereof, at least one surface portion of said bar means defining support means lying in a plane that is vertically displaced from the plane of the remaining portion of said bar means, abutment means at the opposed ends of said tray and projecting outwardly beyond the adjacent ends of the underlying plate means, meat products or the like adapted to be disposed onto the tray of a selected receptacle of said tier and onto the tray of the next receptacle in said tier above said selected receptacle, the plate means of said next receptacle resting upon the meat products in said selected receptacle whereby as the meat products are smoked sufficiently to cause shrinkage of said products said next receptacle moves toward and into partially nested relation with said selected receptacle whereupon the abutment means on the tray of said next or supported receptacle seats upon the support means of said selected receptacle.

4,417,510

SHEAR BALER

Allen B. Sharp, Ottumwa, Iowa, assignor to Al-Jon, Inc., Ottumwa, Iowa

Filed Sep. 28, 1981, Ser. No. 306,160
Int. Cl.³ B30B 9/32
U.S. Cl. 100—98 R 16 Claims



1. In an improved shear baler which is adapted to efficiently process large volumes of disparate scrap metals into discrete,

high density, compact bundles and which comprises: a housing including a bottom wall, a first side wall, a second side wall, an end wall, and a top wall which define a compression chamber having a first end and a second end and having a unifor.n, transverse cross-section perpendicular to a longitudinal axis that extends between the first and second ends of the compression chamber and that is perpendicular to the plane of the end wall; a shear ram which has a leading face congruent to and substantially the same size as the cross-section of the compression chamber, which has a shear blade means mounted on and along the upper, transverse edge of the leading face, and which is movable, along a path of movement parallel to the longitudinal axis, between a first position wherein the leading face is adjacent to the first end of the compression chamber and a second position wherein the leading face is adjacent to the second end of the compression chamber and spaced a predetermined distance from the end wall; the top wall having an opening therein adjacent to the first end of the compression chamber through which scrap metal to be processed can be introduced into the compression chamber when the shear ram is in its first position; fixed shear blade means mounted on and along the edge of the top wall opening adjacent to the first end of the compression chamber and adapted to cooperate with the shear blade means on the shear ram to shear metal therebetween when the shear ram moves from its first position to its second position; the first side wall having a first opening therein adjacent to the second end of the compression chamber and the end wall, the first side opening having a width in the direction parallel to the longitudinal axis, substantially equal to the predetermined distance; the second side wall having a second side opening therein adjacent to the second end of the compression chamber and the end wall, the second side opening being aligned with and being congruent to and substantially the same size as the first side opening; a side mounted ram mounted adjacent to the first side wall so that its central axis is aligned with first and second side openings and is perpendicular to the longitudinal axis, the side mounted ram having a ram head which is substantially congruent to and substantially the same size as the first side opening and which is movable, along a path of movement parallel to its central axis, between a first position wherein the ram head is disposed within the first side opening so that the leading face of the ram head forms a continuation of the first side wall and second position wherein the ram head is disposed adjacent to the second side opening; a side gate mounted exterior to the compression chamber and adjacent to the second side opening, the side gate being movable between a first position wherein it overlies and closes the second side opening and a second position wherein it is disposed remote from the second side opening; first means for moving the shear ram between its first and second positions; second means for moving the side mounted ram between its first and second positions; third means for moving the side gate between its first and second positions; and means for controlling the operation of the first, second, and third moving means; the improvement comprising:

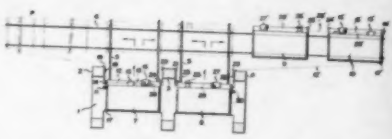
the shear ram including a body having a cut away portion in and along the upper, transverse edge of the leading face, with the plane of the leading face being spaced a certain distance from the fixed shear blade means on and along the edge of the top wall when the shear ram is in its second position; a blade block mounted in the cut away portion, the blade block having a cut away portion in and along its upper, transverse edge, with the length of the blade block, in the direction parallel to the longitudinal axis, being greater than said certain distance; at least one shear blade, with each shear blade having more than one shearing edge thereon; means for removably mounting and securing each shear blade in the cut away portion of the blade block so that one of its shearing edges is disposed along and defines at least a portion of the upper transverse edge of the leading face, so that each of the other shearing edges of the shear blade are spaced from the upper, transverse edge of the leading face, and so that each shear blade may be shimmed with respect to the blade block; and means for removably mounting and securing the blade block on the shear ram body so that the blade block may be shimmed with respect to the shear ram body.

4,417,511

MOVING BOLSTER ARRANGEMENT

Naoaki Ikeoka, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Jun. 8, 1982, Ser. No. 386,320
Int. Cl.³ B30B *15/06*
U.S. Cl. 100—229 R **1 Claim**



1. A moving bolster arrangement for a transfer press having a bed and a first, a second and a third upright defining a first and a second press station therebetween, comprising:

a first left side moving bolster adapted to be moved into and out of said first press station;

a second left side moving bolster adapted to be moved into and out of said second press station;

a first right side moving bolster adapted to be moved into and out of said first press station;

a second right side moving bolster adapted to be moved into and out of said second press station;

a first motor mounted on said first left side moving bolster for driving the same;

a second motor mounted on said second left side moving bolster for driving the same;

a third motor mounted on said second right side moving bolster for driving the same;

a fourth motor mounted on said first right side moving bolster for driving the same;

a first controller mounted on said first left side moving bolster;

a second controller mounted on said second right side moving bolster;

a first cable reel mounted on said bed at a left end portion thereof;

a second cable reel mounted on said second left side moving bolster;

a third cable reel mounted on said bed at a right end portion thereof;

a fourth cable reel mounted on said first right side moving bolster;

a first cable winding round said first cable reel and having one end connected to a first power source and the other end connected to said first controller;

a second cable interconnecting said first controller and said first motor;

a third cable winding round said second cable reel and having one end connected to said first controller and the other end connected to said second motor;

a fourth cable winding round said third cable reel and having one end connected to a second power source and the other end connected to said second controller;

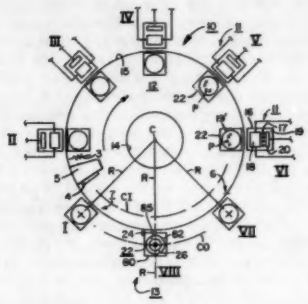
a fifth cable interconnecting said second controller and said third motor; and

a sixth cable winding round said fourth cable reel and having one end connected to said second controller and the other end connected to said fourth motor.

4,417,512
CAN CRUSHER
Henry C. Engelke, 1701 S. Walker La., Stockton, Calif. 95205
Filed Nov. 13, 1981, Ser. No. 321,111
Int. Cl.³ B30B 9/32
U.S. Cl. 100—266 11 Claims

1. A disposable container crushing device comprising:
a receiver shaped to hold a collapsible, disposable container, said receiver having a sidewall and an endwall extending at a substantially right angle from one end of said sidewall, said sidewall having a substantially circular curvature about an axis perpendicular to said endwall,
a piston at the other end of said sidewall, said piston having a surface substantially parallel to said endwall and movable within said receiver from said other end of said sidewall to said one end thereof,
a first elongated operating shaft attached to and extending from said receiver in an operating direction substantially parallel to said sidewall and the direction of travel of said piston,
a second elongated operating shaft attached to and extending from said piston in said operating direction, and operating means for manually moving one of said operating shafts in said operating direction with respect to the other of said shafts,
one of said operating shafts being tubular, said shafts both extending in the same direction from said receiver and said piston, the other of said operating shafts being an inner shaft telescoped within said tubular shaft,
one of said shafts extending farther from said receiver than said other such that a portion of said one distal from said receiver extends beyond the end of said end of said other which is distal from said receiver,
said operating means comprising (a) a pair of foot pedals extending perpendicularly out from said other of said shafts at the end thereof distal from said receiver in respectively opposite directions, and (b) a pair of handholds extending perpendicularly out from the portion of said device adjacent said receiver in respectively opposite directions corresponding to the respective directions in which said foot pedals extend, the distance between said foot pedals and said handholds being sufficiently great that a human can operate said device with his or her foot on one of said foot pedals while holding said handholds with his or her hands.

4,417,513
PRINTING APPARATUS AND METHOD
Bruce A. Milliman, Big Flats, and Harris G. Rodgers, Sr., Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Sep. 17, 1982, Ser. No. 419,471
Int. Cl.³ B41F 17/00
U.S. Cl. 101—41 5 Claims



1. A printing apparatus for decorating articles comprising:
a circular turret rotatable about its center, said turret having an outer peripheral edge;
a plurality of collectors mounted on said turret at arcuately spaced intervals and equally spaced from said center and lying in a plane; each collector including a frame having an aperture therein; and a membrane stretched across the frame over the aperture, the membrane having a design carrying side;
a plurality of print stations including a gravure surface having engravings thereon, the gravure surface forming a portion of a design; a squeege for spreading ink across the gravure surface; a doctor blade for doctoring the ink; a support bar mounted on an axis carrying the squeege and doctor blade in opposition about the axis; means coupled to the support bar for rotating the same about the axis for engaging the squeege with the gravure surface and rotating the support bar about the axis for withdrawing the squeege from the gravure surface and engaging the doctor blade therewith; means for reciprocally moving the support bar relative to the gravure surface when one of the squeege and the doctor blade is engaged with the gravure surface; a transfer roll adapted to be rolled in the plane across the gravure surface and the collector for picking up the ink from the gravure surface and depositing it on the collector; a print trolley reciprocally mounted between respective inboard and outboard positions and a pivotal support mounted thereon; a support arm mounted in said pivotal support, the transfer roll being rotatably mounted to said support arm and being carried about said pivotal support; pivoting means coupled to the support arm for actuating the same and moving the transfer roll tangentially into the plane at the outboard position and out of the plane at the inboard position; means for moving the trolley from the outboard to the inboard position for rollably engaging the transfer roll with the gravure surface and the collector while in the plane and for moving the transfer roll out of the plane while the trolley moves from the inboard to the outboard position; belt means responsive to the position of the trolley for rollably driving the transfer roll to thereby maintain the same in a repeatably registerable position relative to each collector;
print transfer means including a flexible plunger for engaging a side of the collector opposite the design carrying side thereof and driving the same into engagement with the articles to be decorated for transferring the complete design to the articles by intimate contact with the collec-

tor; means for rotatably indexing the turret so that each collector is sequentially aligned with each print station and the print transfer station in registration with a portion of the design produced at each other print station to thereby produce a complete design; hinge means coupling each collector to the turret near a peripheral edge thereof; and means for deploying the collector between the respective positions inboard and outboard of the peripheral edge of the turret, the design carrying side of the collector facing in one direction while receiving the design and in an opposite direction for engaging the articles to be decorated.

4,417,514

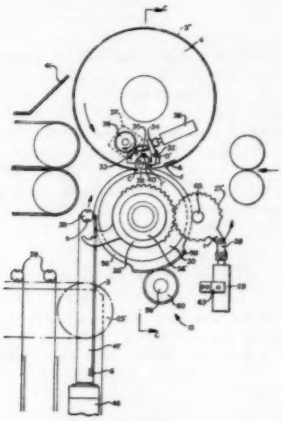
PRINTING PLATE EXCHANGE SYSTEM

Noriyuki Hoshino, Mihara, Japan, assignor to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 13, 1982, Ser. No. 407,784

Int. Cl.³ B41L *45/08*

U.S. Cl. 101—54 **1 Claim**



1. A printing plate exchange system comprising a unit box holding therein a plurality of plates each mounted to a fixture rod and capable of being disposed under a printing cylinder, said fixture rod having a slot adapted to engage with a fixture strip of the plate and a holding member for preventing the fixture strip from disengaging therefrom, and plate mount/dismount means disposed under said printing cylinder for mounting and dismounting the plate in said unit box onto and from said printing cylinder by the intermediary of said fixture rod.

4,417,515

LATERAL SUPPORT FOR SQUEEGEE

Mathias Mitter, Falkenstr. 57, 4815 Schloss Holte, Fed. Rep. of Germany

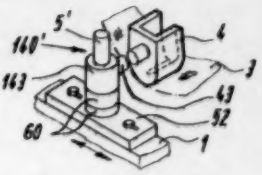
Filed Aug. 19, 1981, Ser. No. 294,165

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1980, 3032345

Int. Cl.³ B41L *13/06*

U.S. Cl. 101—120 **29 Claims**

1. A lateral support for a squeegee of a printing mechanism of a screen printing machine, comprising at least one supporting element arranged to support each end portion of a squeegee independent of the screen support so that the squeegee lies on an object to be printed solely under its own weight; and at least one substantially upright upwardly open guiding element arranged to slidingly guide each said supporting element for free movement in a substantially upright direction and formed to limit movement of said supporting element downwardly but to allow unlimited movement of said supporting element upwardly so that said supporting element can unobjectionably move upwardly along said guiding element under the action of the object running under the squeegee and solely by the upward movement can even disengage from said guiding element for disassembling purposes, without releasing other structural parts.



4,417,516

ROTARY PRINTING MACHINE SYSTEM

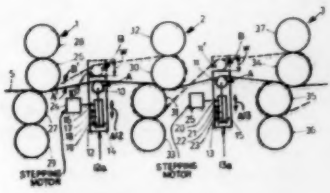
Hermann Fischer, Augsburg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 372,999

Claims priority, application Fed. Rep. of Germany, May 15, 1981, 3119398

Int. Cl.³ B41F *11/00, 5/14*

U.S. Cl. 101—181 **9 Claims**



1. Rotary printing machine system having

at least two printing stations (1, 2, 3, 4) for sequential printing on a web (5) of substrate, guided from one station (1, 2, 3) to the next neighboring station (2, 3, 4)

said printing stations being operative in selected different printing modes resulting in different operating conditions of the printing stations and requiring different length web paths through said stations;

each station having

at least one paired rubber blanket cylinder and plate cylinder, and means forming an impression cylinder;

web deflection means for guiding the path of the web, located between adjacent printing stations and for compensating for different lengths of the web between said stations when the stations are operated in the said different modes; said web deflection means comprising:

a web deflection roller (10, 11; 51, 51, 62); means (12a, 13a, 24, 25, 53, 54, 55) for applying a positioning force on said roller operative to move the roller between predetermined defined positions (A, B), in which each predetermined position is associated one of the predetermined printing modes and a predetermined path length of the web through the stations of the machine;

presettable web tension control means (14–19, 20–23, 24, 25; 53–55) acting on the force applying means operative to apply a superimposed tensioning force on said roller, and hence on the web, to deflect the web by a distance which is small with respect to the distance between said predetermined positions and which is effective to control the tension of the web between adjacent stations as a function

of predetermined operating parameters, including web path length arising upon printing in the selected mode; and

adjustment control means coupled to and controlling said presettable web tension control means to permit repetitive preset application of the same tensioning force by said web deflection means on the web subsequent to interruption of printing operation of the printing machine system.

4,417,517

PRINTER WITH MOVEABLE PAPER STRIP GUIDE ROLLS

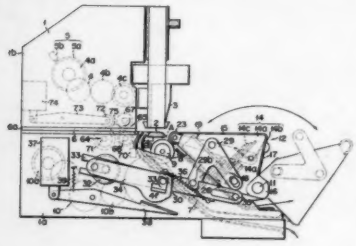
Susumu Matsuda; Nobuaki Matsukura, both of Shizuoka; Masataka Suzuki, Oohito, and Tsugio Narushima, Mishima, all of Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,800

Claims priority, application Japan, Jun. 19, 1981, 56-94611; Jun. 19, 1981, 56-90785; Jun. 19, 1981, 56-90787

Int. Cl.³ B41F *1/08;* B41J *11/50*

U.S. Cl. 101—288 9 Claims



1. An apparatus with a printer for a printing paper strip, comprising:

an apparatus housing;

a platen provided to the apparatus housing;

a paper feed guide having an outlet on one side of the platen, through which the printing paper strip is guided to the platen;

a paper discharge guide having an inlet on the other side of the platen, through which the printing paper strip is guided from the platen;

a unit frame attached to the apparatus housing to be able to rock between an open position where the paper discharge guide is exposed and a closed position where the paper discharge guide is covered and the printing paper strip is allowed to be guided;

a drive roller provided to the apparatus housing located on the other side of the platen;

a pinch roller mechanism provided to the unit frame and having a pinch roller which goes away from the drive roller when the unit frame is located in the open position, and approaches the drive roller when the unit frame is located in the closed position, so that the printing paper strip is held between the pinch roller and the drive roller when the pinch roller is brought close to the drive roller; and

a rotation drive mechanism for rotating the drive roller to carry the printing paper strip from the paper feed guide to the paper discharge guide via the platen.

4,417,518

DETONATING ARRANGEMENT FOR MISSILES

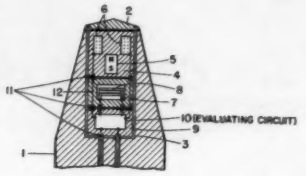
Rainer Siebert, Schwaig; Dietmar Stützle, Lauf/Pegn, and Peter Weidner, Breitenbrunn, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Mar. 8, 1979, Ser. No. 24,428

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1978, 7806953[U]

Int. Cl.³ F42C *13/08*

U.S. Cl. 102—212 5 Claims



1. Detonating arrangement for missiles in which a voltage is inducible in an induction element responsive to a change of the magnetic field of a permanent object at the approach to a ferromagnetic object, the voltage being conductable to the control input of an electronic evaluating circuit addressing a detonating medium; characterized in that the detonating arrangement includes an impact sensor (8) adapted to be coupled to the electronic evaluating circuit (10) in addition to a magnetic proximity sensor constituted of a permanent magnet (5) and an adjoinly located coil serving as the induction element.

4,417,519

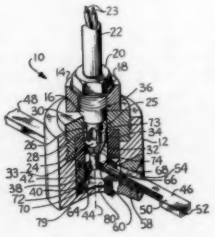
EXPLOSIVE SWITCH

Harry O. Lutz, Cocoa Beach, Fla., assignor to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jun. 4, 1981, Ser. No. 270,508

Int. Cl.³ F42C *15/40*

U.S. Cl. 102—263 10 Claims



1. A fast operating, normally open single actuation switch including:

a body defining a chamber therein having first and second end portions with a central portion therebetween;

means to supply pressurized medium into said first end portion of said chamber;

at least two electrical conductors having end portions constructed from flat wire extending into said central portion of said chamber;

swaging means adapted for movement in said chamber positioned in said chamber between said means to supply pressurized medium and said at least two electrical conductor end portions; and

means for releasably retaining said swaging means in position between said means to supply pressurized medium and said end portions of said at least two electrical con-

ductor end portions until said means to supply pressurized medium does so to force said swaging means into said end portions of said at least two electrical conductors to complete an electrical circuit therebetween including:

a toroidal member having:

an inner surface; and

an outer surface, said outer surface including:

a ring shaped slot in which said end portions of said at least two conductors are positioned, said swaging means including a swaging member having first and second end portions and a conductive central wedge portion therebetween, said first end portion being shaped to slide along said chamber central portion, said second end portion being adapted to engage said means for releasably retaining said swaging means by extending through said toroidal member for support thereby, and said central wedge portion being adapted to swage into said end portions of said at least two electrical conductors to complete an electrical circuit therebetween, said swaging member central portion being frustro-conical in shape having a large diameter end and a small diameter end, said swaging member first end portion being cylindrical in shape and connecting to said large diameter end of said swaging member central portion.

4,417,520

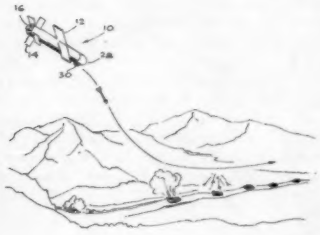
SEQUENTIAL TIME DISCRIMINATION SYSTEM FOR SUB-DELIVERY SYSTEMS

Inge Maudal, Claremont, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Apr. 14, 1980, Ser. No. 139,947

Int. Cl.³ F41G 7/22; F42B 13/50

U.S. Cl. 102—489 **11 Claims**



1. A sub-vehicle control system for independently targetable sub-vehicles comprising:

an independent sub-vehicle control system for directing the sub-vehicle to a target;

sensor means capable of locating and identifying previously hit targets;

target locating means;

discrimination means for receiving data from the sensor means and from the target locating means to eliminate targets identified by the locating means which have also been identified by said sensor means; and

selection means for sensing the output from the discrimination means, selecting a target other than one identified by the sensor means and causing the control system to direct the sub-vehicle to said selected target.

4,417,521

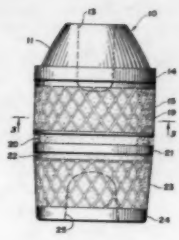
BULLET FOR MUZZLE LOADING GUNS

Ronald R. Dahlitz, Whittier, Calif., assignor to Buffalo Bullet Company, Whittier, Calif.

Filed Oct. 26, 1981, Ser. No. 315,060

Int. Cl.³ F42B 11/20

U.S. Cl. 102—511 **7 Claims**



1. A bullet for firearms, said bullet comprising:

a generally cylindrical-shaped body terminating at its upper end with a generally hemi-spherical point having a truncated upper end;

a first gas seal comprising a cylindrical portion adjacent the point and extending to the outer surface of the body;

a first knurled portion having a plurality of open depressions having walls which extend to about the surface of the cylindrical body;

a second gas seal positioned below the first knurled portion and comprising a cylindrical portion extending to the outer surface of the body, said gas seal having at least one grease groove adjacent thereto, said grease groove being an annular groove extending below the surface of the body;

a second knurled portion positioned below the second gas seal having a plurality of open depressions having walls which extend to about the surface of the cylindrical body; and

a solid lubricant located in the grease groove and in the depressions of the knurled portions.

4,417,522

MOBIL TRACK CORRECTION MACHINE

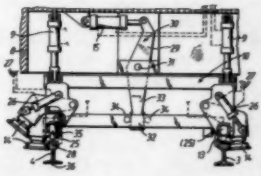
Josef Theurer, Vienna, and Gernot Böck, Aschach, both of Austria, assignors to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed May 7, 1981, Ser. No. 261,572

Claims priority, application Austria, Jun. 4, 1980, 2975/80

Int. Cl.³ E01B 29/04, 35/00

U.S. Cl. 104—7 B **8 Claims**



1. A mobile track correction machine mounted for mobility on the rails of the track and comprising

(a) a machine frame,

(b) a tool carrier mounted on the machine frame for vertical adjustment in relation thereto and for guidance along the track,

(c) track lining and lifting tools mounted on the carrier and engageable with the track rails, whereby the carrier is engaged with the track,

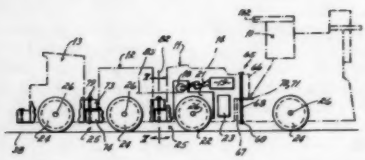
(d) power drive means linking the tool carrier to the machine frame, the power drive means including
(1) a lining drive and
(2) a lifting drive,
(e) a control circuit controlling actuation of the power drive means and including
(1) a switching element operable to terminate actuation of the lifting drive, and
(f) a safety arrangement for terminating the actuation on disengagement of the tool carrier from the track, the safety arrangement including
(1) an electronic, inductive proximity fuse affixed to the tool carrier and mounted above and at a nominal distance from the running face of a respective rail engageable by a respective lifting tool, the proximity fuse being connected to the switching element and capable of transmitting an operating signal thereto without touching the running face when the distance between the proximity fuse and the running face is more than the nominal distance, and
(2) a mechanism for vertically adjustably mounting the proximity fuse on the tool carrier.

4,417,523

RIDEABLE MOTOR-DRIVEN TOY TRAIN

James F. Mariol, 481 Deanview Dr., Cincinnati, Ohio 45224

Division of Ser. No. 185,158, Sep. 8, 1980, Pat. No. 4,357,877.
This application Nov. 2, 1981, Ser. No. 316,975
Int. Cl.³ A63H *21/00*; B61G *1/20*
U.S. Cl. 105—1 T **12 Claims**



1. A rideable, motor driven toy train assembly comprising,
a first car having the appearance of a locomotive, said locomotive appearing car having a single axle and a pair of wheels mounted upon said locomotive appearing car axle,
a tender car having a single axle and a pair of wheels mounted upon said tender car axle, said tender car being connected to said locomotive appearing car by a connection pivotable about a vertical axis,
a seat defined on the top surface of said tender car, handles upon said locomotive appearing car for steering said train assembly,
a battery for driving said electric motor,
transmission means in said tender car for drivingly connecting at least one of said pair of wheels of said tender car to said electric motor, and
said locomotive appearing first car having a cabin appearing section near the rear thereof, and said handles for steering said train assembly being located on said cabin appearing section.

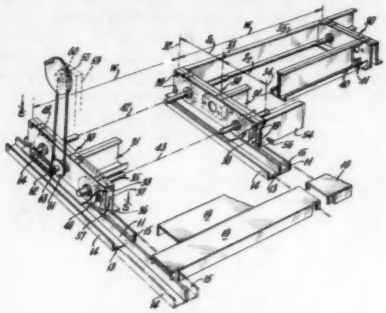
4,417,524

MODULAR FILE OR THE LIKE SYSTEM

David A. Quinn, Tuxedo, and Mladen Peros, Astoria, both of N.Y., assignors to Supreme Equipment & Systems Corp., Brooklyn, N.Y.

Continuation-in-part of Ser. No. 954,098, Oct. 24, 1978, abandoned. This application Oct. 24, 1979, Ser. No. 87,703
Int. Cl.³ A47B *53/02*
U.S. Cl. 105—101 **9 Claims**

1. A modular rollable base adapted to support two like front-access cabinets or the like modules in back-to-back relation, the base including a modular frame comprising at least one pair of elongated channels arranged parallel with one another and downwardly open at longitudinal ends of the frame; an elongated longitudinal beam secured at its ends to respective midpoints of said pair of elongated channels, said longitudinal beam and said elongated channels being of substantially the same height and establishing an H-pattern of continuous cabinet-module support in a horizontal plane, said elongated channels each having a pair or substantially parallel side walls, each side wall having at least one pair of shaft-mounting openings, said pairs of shaft-mounting openings in said side walls being aligned with each other and arranged to be on opposite ends of said elongated channels with respect to said respective midpoints, corresponding aligned shaft-mounting openings in respective elongated channels being in alignment with each other; a plurality of axle elements each extending through a respective aligned pair of said shaft-mounting openings in said elongated channel; a plurality of rotational support means each arranged in said shaft-mounting openings



of each channel wall for rotationally supporting said axle elements, each of said axle elements having a projecting end extending outward of its associated rotational support means; a wheel secured to each axle element between the locations of its associated rotational support means, said wheel having a radius which is sufficiently long so that a portion of said wheel extends beneath said frame; first and second tubular shaft elements extending longitudinally between respective opposite ends of said elongated channels for engaging with said projecting ends of respective one.s of said axle elements extending through said aligned shaft-mounting openings in said respective ones of said elongated channels, and a plurality of rigid connection means for rigidly connecting said first and second tubular shaft elements to said projecting ends of said respective ones of said axle elements whereby respective ones of said axle elements are rotatively and axially coupled to one another, and thereby provide enhanced structural integrity for the modular rollable base.

4,417,525

FLUID SELF-STEERING RAILWAY VEHICLE TRUCK

Samuel Levy, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 125,509, Feb. 28, 1980, abandoned.
This application Jun. 18, 1982, Ser. No. 389,727
Int. Cl.³ B61C *3/00*, *9/50*; B61F *5/38*
U.S. Cl. 105—166 **6 Claims**

1. In a railway vehicle truck having a longitudinal axis in its direction of travel and comprising a rigid truck frame, multiple wheel set assemblies including a leading wheel set assembly and a trailing wheel set assembly disposed aft of said leading wheel set assembly along said longitudinal truck axis, said wheel set assemblies each comprising an axle, a pair of flanged wheels having wheel tread conicity and mounted on said axle, and two journal boxes mounted adjacent opposite ends of said axle and operatively disposed in said truck frame so that each

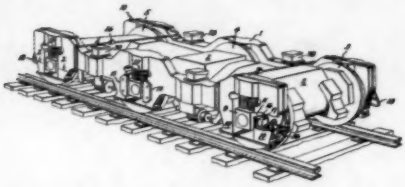
corresponding wheel set assembly is operatively positioned in said truck, each of said journal boxes including:

a bearing mounted about a section of said axle, said bearing supporting said axle and providing a means of rotation of said axle relative to said journal box,

longitudinal load bearing surfaces disposed in planes substantially perpendicular to said longitudinal axis, said planes being disposed forward and aft of said axle along a line parallel to said longitudinal axis, and

at least one lateral load bearing surface disposed substantially orthogonal to said longitudinal load bearing surfaces, the improvement comprising:

means for repositioning said journal boxes of said leading and trailing wheel set assemblies with respect to said truck frame, said means including a plurality of sets of hydraulic force transmitting means each having at least two fluid



containing force transmitting means, each of said force transmitting means being positioned on said truck frame adjacent and movable relative to one of said journal box load bearing surfaces of said leading wheel set assembly and each of said force transmitting means including a rub plate portion adjacent and engageable with one of said journal box load bearing surfaces,

first and second ones of said sets including force transmitting means engageable with said lateral and said forward-disposed longitudinal load bearing surfaces of each of said journal boxes of said leading wheel set assembly,

a third one of said sets including force transmitting means engageable with said aft-disposed longitudinal load bearing surfaces of both of said journal boxes of said leading wheel set assembly; and

conduits interconnecting the force transmitting means in each of said sets in flow communication.

4,417,526

GONDOLA CAR CONSTRUCTION

Walter J. Marulic, Dunwoody, and Kent N. Johnson, Atlanta, both of Ga., assignors to United-American Car Co., Atlanta, Ga.

Filed Jun. 22, 1981, Ser. No. 275,610
Int. Cl.³ B61D *3/08, 17/08, 49/00*
U.S. Cl. 105—406 R **21 Claims**

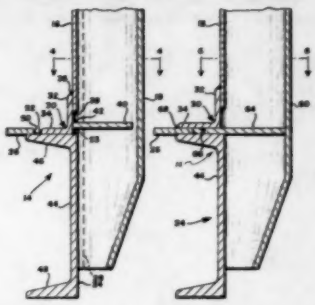
1. A railroad gondola car comprising:

a subframe assembly including a side sill channel member,

a side structure including a side sheet having inner and outer surfaces and a plurality of vertical side posts secured to said outer surface of said side sheet, said side posts comprising channel-shaped members wherein the channel opens toward said side sheet,

a longitudinally extending angle member secured to said side sheet surface and adjacent the lower edge of said side sheet,

a structural reaction plate member transverse of said side post secured to said side posts within the channel thereof and having one end extending outwardly of the channel a distance at least as great as the thickness of said side sheet, and said structural reaction plate member being secured to said angle member and said outwardly extending end of said structural reaction plate member being adjacent said side sill channel member, and



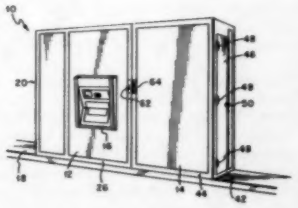
said side posts extending below said side sheet and being secured to said side sill channel member and said angle member being secured to said subframe assembly.

4,417,527

AUTOMATIC TELLER SECURITY APPARATUS

Waymon D. Williams, 7206 La Manga, Dallas, Tex. 75248, and Edward A. Moore, 3305 Heathercrest Dr., Garland, Tex. 75042

Filed Aug. 17, 1981, Ser. No. 293,501
Int. Cl.³ E04H *1/12;* **E04B** *1/346;* **A47B** *43/00*
U.S. Cl. 109—2 **12 Claims**



1. For use in association with an automatic teller machine having a cash box and internal mechanical and electrical parts and having an exposed control panel, a security apparatus comprising:

(a) a first enclosure;

(b) a second enclosure;

(c) a stationary platform;

(d) securing means for securing said first enclosure to said stationary platform;

(e) pivot means connecting said first and second enclosures so that said second enclosure is rotatable about a substantially vertical axis between a first position and a second position which is distinct from the first position wherein the second enclosure is in substantial abutment with the first enclosure when in the second position;

(f) mounting means on said first enclosure for mounting said automatic teller machine so that said control panel of said automatic teller machine is exposed and said cash box and internal parts of said automatic teller machine are concealed within said first enclosure;

(g) service entry means for gaining entry to said second enclosure when said second enclosure is in said second position;

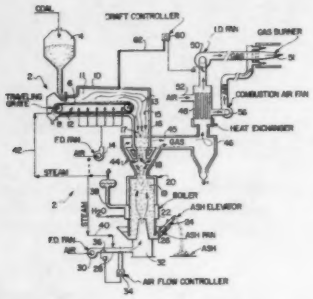
(h) portal means for providing access into the first enclosure by a user located in the second enclosure only when said second enclosure is in said second position.

4,417,528

COAL GASIFICATION PROCESS AND APPARATUS

Paul H. Vining, Nashville, and Jimmy B. Smith, Columbia, both of Tenn., assignors to Mansfield Carbon Products Inc., Nashville, Tenn. and Peabody Development Company, St. Louis, Mo.

Filed Sep. 29, 1982, Ser. No. 427,442
Int. Cl.³ F23G 5/00
U.S. Cl. 110—229 8 Claims



1. In combination

a traveling grate reactor having a chamber with input and output ends,

means for feeding coal into the input end,

means for moving said coal from the input end to the output end,

means for feeding gases selected from the group comprised of air, oxygen and steam into the reactor chamber,

a shaft furnace having a chamber with upper and lower ends, the lower end disposed below the output end of the reactor chamber for receiving coal gravity discharged therefrom,

means for receiving coal discharged from the lower end of the shaft furnace chamber,

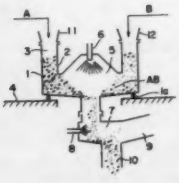
and gas take-off means connected to the lower end of the shaft furnace chamber, said gas take-off means including gas drafting means for down drafting gas from the traveling grate reactor chamber through the coal in said shaft furnace chamber and into the gas take-off means.

4,417,529

METHOD FOR MELTING AND TREATING WASTE

Tadao Fujimoto, Kobe; Hiroyuki Fujiuchi, Ibaraki; Kenichi Shimizu, Yokohama, and Seiichiro Ueda, Kobe, all of Japan, assignors to Kubota Ltd., Osaka, Japan

Filed Feb. 19, 1982, Ser. No. 350,318
Claims priority, application Japan, Oct. 5, 1981, 56-157467
Int. Cl.³ F23G 7/04
U.S. Cl. 110—346 9 Claims



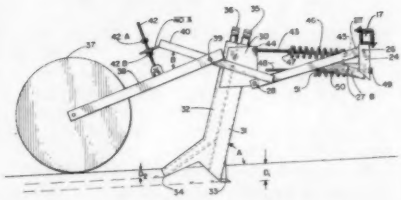
1. A method for melting and treating waste to be treated such as waste water treatment sludge and incinerated ash of garbage, comprising the following steps; mixing the waste to be treated with an auxiliary fuel in powder, granular or solid form or in the form of a mixture of powder, granular and solid fuel components, which has its own calorie value, further mixing said waste to be treated with an additive so that said waste to be treated has the composition ratio of 40~60% of SiO_2, 5~25% of Al_2O_3 and 15~55% (by weight) of material consisting of the substances selected from the classes containing FeO, CaO, K_2O and Na_2O and melting the resulting mixture.

4,417,530

PLANTING APPARATUS

Ivyl D. Kopecky, Ypsilanti, N. Dak., assignor to Haybuster Manufacturing, Inc., Jamestown, N. Dak.

Continuation-in-part of Ser. No. 184,664, Sep. 8, 1980, abandoned. This application Feb. 12, 1982, Ser. No. 348,588
Int. Cl.³ A01C 5/00
U.S. Cl. 111—73 5 Claims



1. A planting apparatus comprising:

a shank assembly having a housing defining a pair of upright tubular sections, a first of said sections having an outlet at the lower end generally centered on the shank assembly and at a first predetermined depth when the shank assembly is in a working position;

a spear point having a center portion and laterally extending wing portions, the center portion opening a furrow of maximum depth;

means to provide a granular fertilizer material to said first tubular section for depositing the fertilizer in the ground generally centered on the shank and directly behind the center portion of the spear point;

a pair of tubes mounted on the housing having first ends opening into the second tubular section adjacent the lower end of the second tubular section, the first ends of said tubes being adjacent each other and the tubes diverging outwardly and downwardly from the shank assembly housing in rearward direction, second ends of said tubes being spaced apart laterally and terminating rearwardly of the housing and forming outlet ports at a level above the center portion of the spear point and deposited fertilizer and above and behind the lateral portions of the spear point, the tubes having solid walls that diverge sideways in rearward direction and which tend to divide the furrow to be wider than the housing immediately ahead of the outlet ports;

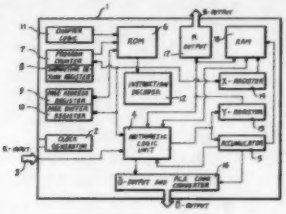
means to provide seed grain to said second tubular section; and

guide wall means for guiding the seed grain from the second tubular section into the two tubes and dividing the seed grain from said second tubular section into two portions, one of which portions is provided to one of the pair of tubes, and the other of which portions is provided to the other of the pair of tubes.

4,417,531
SEWING MACHINE WITH ELECTRONIC CONTROLLED STITCH PATTERN GENERATOR

Umeo Doyama, Tokyo, Japan, assignor to Riccar Company, Ltd., Tokyo, Japan

Filed Feb. 23, 1979, Ser. No. 14,487
Claims priority, application Japan, Mar. 2, 1978, 53-22778; Jun. 14, 1978, 53-80363; Jul. 24, 1978, 53-89498
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—158 E **8 Claims**



6. In a sewing machine having a memory for storing stitch pattern data, a plurality of pattern selection switches, each corresponding to at least one of said stored patterns, and a microprocessor for accessing said stitch patterns in accordance with a selected pattern switch, the improvement comprising:

a. a plurality of data words independently accessible from the memory and representing each stitch in a stitch pattern stored in said memory beginning with a starting address,

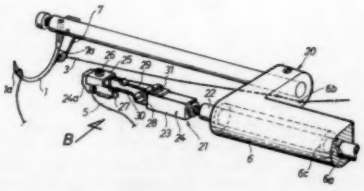
b. means coupled to said memory for selecting the starting address of a selected, stored stitch pattern, and

c. means coupled to said memory for successively gating each data word of each stitch of the selected stitch pattern to said stitch forming mechanism to form each stitch of said selected stitch pattern.

4,417,532
SUTURING INSTRUMENT FOR SURGICAL OPERATION

Eguchi Yasukata, Kunitachi, Japan, assignor to Janome Sewing Machine Industry Co., Ltd., Japan

Filed Jun. 5, 1981, Ser. No. 270,726
Claims priority, application Japan, Jun. 6, 1980, 55-75587
Int. Cl.³ D05B *1/00*
U.S. Cl. 112—169 **4 Claims**



1. A suturing instrument for surgical operation comprising:

(a) a support gripped by an operator,

(b) a needle bar fixedly secured at one end thereof to the support,

(c) a curved needle removably attached to the other end of the needle bar and supplied with a needle thread,

(d) a holder bar mounted on the support and axially movable irrespectively of the stationary needle bar to and away from a thread loop formed at the curved needle during the stitching operation,

(e) a shuttle holder mounted on one end of the holder bar,

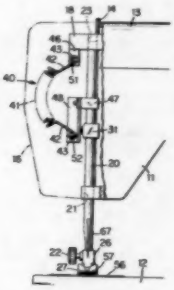
(f) a shuttle loosely received in a space defined by the shuttle holder and supplied with a shuttle thread,

(g) means for detaining the shuttle in the space defined by the shuttle holder, said shuttle being of a streamlined structure pointed at one end thereof for guiding the thread loop therearound, said shuttle being positioned in the space in such manner that the pointed end thereof is directed to the support opposite from the curved needle, said shuttle holding bar being operated when said needle bar is kept standstill after the thread loop is formed so that the shuttle may traverse on the outside of the thread loop formed at the curved needle as the shuttle holding bar advances toward the needle, and may traverse the thread loop on the inside thereof as the shuttle holding bar returns to the support, thereby forming lock stitches with the needle and shuttle threads for suturing an incision under the surgical operation.

4,417,533
SPRING BIASED PRESSER FOOT

Nobuyasu Oshima, and Tetsuya Tsumura, both of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jan. 12, 1981, Ser. No. 225,031
Claims priority, application Japan, Jan. 31, 1980, 55-10769; Feb. 8, 1980, 55-14943
Int. Cl.³ D05B *29/00*
U.S. Cl. 112—235 **4 Claims**



1. A work presser device for a sewing machine provided with a feed mechanism having a feed dog operative through a throat plate to engage a work piece for advancing the latter, said work presser device including a presser bar mounted on a machine frame for axial movement, a presser foot attached to the lower end of said presser bar and means for urging said presser bar downwardly toward said throat plate and said feed dog,

wherein the improvement comprises said urging means including a constant-force spring whose resilient force remains substantially constant within a certain range of deflection thereof,

said constant-force spring having a closely wound intermediate coil portion and a pair of arm portions extending outwardly from the ends of said coil portion,

said arm portions being pivotally connected at free end thereof to said presser bar and said machine frame, respectively, said constant-force spring having an arcuate shape so as to provide a constant force within said certain range of deflection in its connected state,

said constant-force spring causing said presser foot to press the work piece with a substantially constant pressure irrespective of the axial movement of said presser bar due to variation in thickness of the work piece during a sewing operation.

4,417,534
LUBRICANT SENSING DEVICE FOR SEWING MACHINES

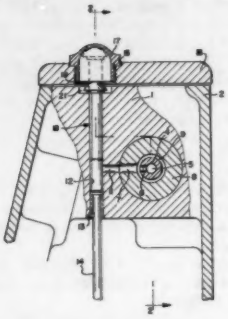
Hermann Gauch, Moglingen, and Wolf R. von Hagen, Hemmingen, both of Fed. Rep. of Germany, assignors to Union Special G.m.b.H., Stuttgart, Fed. Rep. of Germany

Filed Jun. 25, 1981, Ser. No. 277,432

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1980, 3028456

Int. Cl.³ D05B *71/00*

U.S. Cl. 112—256 **13 Claims**



1. In a sewing machine having a frame including an upper arm, a pressurized lubrication system arranged within said frame including a series of interconnecting lubricant passageways and a lubricant sensing device comprising:

indicator means arranged for free sliding movement within the upper arm of said machine, said indicator means having a rod like stem portion with a cap arranged at one end thereof, said stem portion being cooperatively arranged in said passageway such that it is positionally sensitive to fluid pressures therein and is adapted to position said cap so as to indicate the fluid flow and pressure in said system.

4,417,535
SEWING MACHINE BELT FEEDER WITH TENSIONER

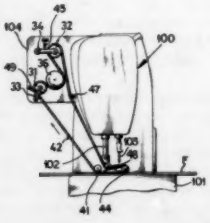
Franz Hannemann, Detmold, Fed. Rep. of Germany, assignor to Dürkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Dec. 17, 1981, Ser. No. 331,919

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048012

Int. Cl.³ D05B *27/04*

U.S. Cl. 112—304 **4 Claims**



1. A transporter for moving a workpiece layer past a reciprocating needle of a sewing machine, comprising:

an endless belt having a stretch adjoining the path of a workpiece layer to be advanced thereby in a predetermined transport direction;

a rotating sheave partly enveloped by said belt at a location remote from said stretch for entraining same in a sense consistent with said transport direction;

a plurality of deflecting rollers engaged by said belt for guiding same around said sheave and along said stretch, said deflecting rollers including a first roller closely approaching an upstream side of said sheave, a second roller downstream of said sheave and a third roller upstream of said first roller;

a first lever having a fixed first fulcrum and a free end carrying said first roller, said first fulcrum defining with the axes of said first roller and of said sheave a triangle lying in the plane of belt motion and having an obtuse angle at the axis of said first roller, said third roller lying between the sides of said triangle including said obtuse angle for exerting upon said first roller a force tending to move the latter closer to said sheave in response to a slowing of said belt by an obstacle along said stretch with resulting clamping of said belt between said first roller and said sheave;

a second lever having a fixed second fulcrum and a free end carrying said second roller; and

spring means engaging said second lever for placing said belt under a tension insufficient to clamp same between said first roller and said sheave in the absence of a belt-slowing obstacle along said stretch.

4,417,536
LATERALLY PIVOTABLE UPPER FEED DOG

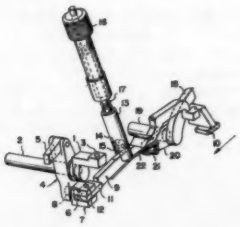
Kengo Shiomi, Tokyo, Japan, assignor to Tokyo Juki Industrial Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,317

Claims priority, application Japan, Dec. 25, 1980, 55-184830

Int. Cl.³ D05B *27/06*

U.S. Cl. 112—311 **4 Claims**

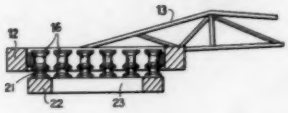


1. A cloth feed mechanism for sewing machines comprising a lower feed dog which moves in and out as well as moves longitudinally to a throat plate and a support member having an upper feed dog fixed thereon adapted to move, interlocked with a driving member, in four directions above an upper surface of the throat plate with a phase in the vertical movement being opposite to that in the vertical movement of the lower feed dog and with a phase in the longitudinal movement being identical to that in the longitudinal movement of the lower feed dog for feeding the cloth in synchronism with the the lower feed dog, wherein said support member is rotatably supported around a vertical shaft so that the upper feed dog can be moved sideways from a position opposite to the sewing area, and further, a base portion of said support member is supported in a manner to be rotatable about a horizontal axis perpendicularly intersecting a direction of feeding cloth so that said upper feed dog can move in four directions.

4,417,537
MOORING BUOY FOR TANKER SHIPS

Vincenzo Di Tella, Padua; Dario Falbo, Campalto; Paolo Minardi, Mestre, and Roberto Tinebra, Lido di Venezia, all of Italy, assignors to Tecnomare S.p.A., Venice, Italy

Continuation of Ser. No. 173,294, Jul. 29, 1980, abandoned. This application Jul. 26, 1982, Ser. No. 402,034
Claims priority, application Italy, Aug. 10, 1979, 84133 A/79
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—230 3 Claims



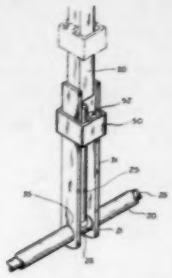
1. A combination offshore terminal and submerged mooring device for tanker ships, comprising:
a block anchored on the sea bed;
an assembly at the sea bottom removably secured onto said anchoring block, including:
an annular support member releasably connected to said anchoring block,
a plurality of stationary pins angularly spaced apart on said annular supporting member and removably secured thereto,
a plurality of rollers mounted on and about said pins for rotation thereon,
wherein each roller and pin forms a chamber therebetween to be filled with lubricant which balances the pressure with the surrounding environment to inhibit the seepage of water thereinto, and wherein bearing means are mounted in each chamber in contact with said pin and roller to facilitate rotation of said roller relative to said pin and adapted to be lubricated by the lubricant which fills said chamber, and said pin has inlet and outlet bores for conveying lubricant to and from said chamber and for maintaining said chamber filled with lubricant,
an annular race for engaging said rollers for rotation therewith as said race is rotated, and
a rigid mooring arm connected to said annular race for horizontal rotation therewith and for vertical movement relative thereto to provide the proper vertical angular trim relative to the ship being moored to the device and to permit the lowering of said arm toward the bottom of the sea when said arm is not being used; and
an offshore terminal buoyant body universally connected to said anchoring block.

4,417,538
MARINE ANCHOR WITH RELEASE CAPABILITY

Thomas A. El-Ramey, Rte. 2, Box 813, Pompano Beach, Fla. 33067

Filed Aug. 27, 1981, Ser. No. 296,959
Int. Cl.³ B63B *21/44*
U.S. Cl. 114—298 8 Claims

1. An anchor comprising a cylindrical tube, a pair of generally flat fluke means having one edge coupled to said tube, said fluke means being spaced apart and lying generally in the same plane with one another, an anchor shaft rotatably coupled to said tube intermediate said fluke means, an opening in said tube intermediate said fluke means and a first rod means within said tube, elongate trigger means secured perpendicularly to said rod means and extending through said opening and means for releasably securing said trigger means to said anchor shaft, said securing means being breakable when the force applied to separate said trigger means and said shaft exceeds a preselected value, said opening permitting said fluke means to move in an

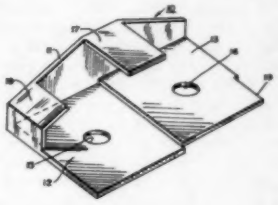


arc defined by an acute angle around the axis of said tube when said securing means is in place.

4,417,539
UNIVERSAL CHOCK

David M. Thompson, 803 Mantoloking Rd., Brick Town, N.J. 08723

Filed Aug. 31, 1981, Ser. No. 297,780
Int. Cl.³ B63B *23/66*
U.S. Cl. 114—381 1 Claim



1. A universal chock comprising a first unit having a first side portion and a first base portion with an upper end and a lower end rigidly secured to the bottom of said first side portion, said upper and lower ends being of the same size and extending perpendicularly from said bottom of said first side portion; a second unit having a second side portion and a second base portion with an upper end and a lower end rigidly secured to the bottom of said second side portion, said upper and lower ends being of the same size and extending perpendicularly from said bottom of said second side portion; said upper and lower end of said first base portion being identical to said upper and lower ends of said second base portion; said upper end of said first base portion fitting over said lower end of said second base portion to reach said bottom of said second side portion, and said upper end of said second base portion fitting over said lower end of said first base portion to reach said bottom of said first side portion to form said chock; means extending between said first and second side portions to secure gear comprising a projection extending from the central top of said first side portion towards, and abutting against, a projection extending from the central top of said second side portion; at least one hole in each of said upper ends of said first and second base portions aligned with corresponding holes in said lower ends of said first and second base portions, to accommodate a means for securing said upper and lower ends of said first and second base portions to a given surface; and having an additional projection being V-shaped and being directly attached to one end of the top of said first side portion and said first base portion and extending towards and abutting against a

similar projection from the top of the same end of said second side portion and said second base portion.

4,417,540

COATING APPARATUS WITH AIR-NOZZLE ARRANGEMENT

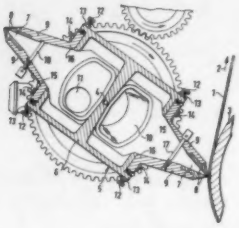
Gerhard Wohlfeil, Monheim, Fed. Rep. of Germany, assignor to Jagenberg Werke AG, Dusseldorf, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 327,875

Claims priority, application Fed. Rep. of Germany, Dec. 19, 1980, 3048133

Int. Cl.³ B05C *11/06*

U.S. Cl. 118—63 **4 Claims**



1. In an apparatus for the continuous, uniform coating with a liquid coating material of a web passing over a counter roll, comprising an air-nozzle arrangement for the removal of excess coating material and the smoothing of a coating, said air-nozzle arrangement being rotatable about its longitudinal center axis, being disposed adjacent to the counter roll and comprising two slot nozzles disposed symmetrically about its longitudinal center axis and displaced 180 degrees relative to each other, each nozzle extending at least over the width of the web, each nozzle including upper and lower lips seated on nozzle-lip holders mounted on the casing of the air-nozzle arrangement and sloping downwardly toward one another to form the nozzle opening, the improvement which comprises imparting to the nozzle-lip holders an angular construction and mounting them on the casing in such a way that they can be position and adjusted in the direction of the nozzle-slot width; the nozzle-lip holder which is uppermost in operative position being thinner along a line extending transversely of its angled downwardly sloping area than the lower nozzle-lip holder; the nozzle-lip holders of each slot nozzle being interconnected through traction screws and thrust screws exerting a pulling and pushing action and which are distributed over the length of the slot nozzle, the apparatus further including adjusting screws with lock nuts distributed over the length of the air-nozzle arrangement and operatively connected to the nozzle-lip holders for positioning thereof, and setscrews disposed at right angles to said adjusting screws for fixing the nozzle-lip holders to the casing.

4,417,541

APPARATUS FOR SPRAYING WORKPIECES AND INTERCEPTING OVERSPRAY

Gerhard Schäfer, Nunkirchen-Salchendorf, Fed. Rep. of Germany, assignor to Fritz Schäfer Gesellschaft mit beschränkter Haftung, Neunkirchen-Salchendorf, Fed. Rep. of Germany

Filed May 21, 1982, Ser. No. 380,952

Claims priority, application Fed. Rep. of Germany, May 23, 1981, 8115387[U]

Int. Cl.³ B05B *13/00, 15/04*

U.S. Cl. 118—326 **7 Claims**

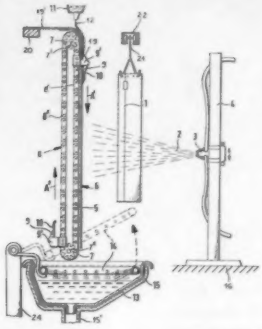
1. An apparatus for the surface-coating of a series of workpieces with a hardenable liquid, comprising:

a booth;

nozzle means in said booth connected to a source of coating liquid and adapted to discharge same in a spray cone centered on a substantially horizontal axis;

transport means in said booth for carrying a series of generally vertical workpieces along a predetermined path past said nozzle means across said spray cone;

a stationary screen with a substantially vertical front surface facing said nozzle means at a location in said booth behind the path of said workpieces, said front surface being large



enough to intercept any excess coating material in said spray cone bypassing the workpieces to be coated;

screen-cleaning means including a substantially horizontal wiper movably extending across said front surface;

drive means coupled with said screen-cleaning means for vertically displacing said wiper along said front surface to scrape said excess coating material therefrom; and

a receptacle below said screen for receiving the excess coating material scraped off said front surface.

4,417,542

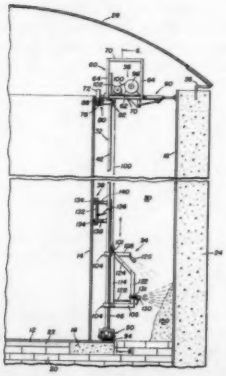
APPARATUS FOR COATING NARROW VERTICAL ELONGATED SPACES

Francis V. Bellafiore, Joliet, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Aug. 5, 1982, Ser. No. 405,162

Int. Cl.³ B05B *13/06, 13/00*

U.S. Cl. 118—306 **10 Claims**



1. Apparatus for applying a coating to one of two walls forming a narrow vertical elongated space, comprising:

a vertical guide track supporting a vertically displaceable carriage thereon adapted to removeably fit in the said narrow vertical elongated space;

power driven means for vertically displacing the carriage; and means supported by the guide track for releasably securing the guide track against movement lateral to the two walls and sideways in the narrow vertical elongated space.

4,417,543

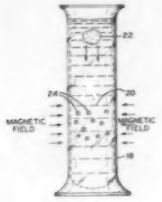
APPARATUS FOR INDIVIDUALLY ENCAPSULATING MAGNETIC PARTICLES

Lawrence L. Lee, Fort Wayne, Ind., assignor to Magnavox Government and Industrial Electronics Company, Fort Wayne, Ind.

Division of Ser. No. 106,793, Dec. 26, 1979, Pat. No. 4,283,438. This application Jul. 27, 1981, Ser. No. 287,023

Int. Cl.³ B05B *5/02*

U.S. Cl. 118—620 **25 Claims**



1. Apparatus for dispersing a preselected average number of magnetic particles in discrete amounts of liquid internal phase and microencapsulating said amounts, comprising:

first means for forming drops of liquid internal phase having a relatively large number of the magnetic particles immersed substantially in each drop of said drops;

second means for receiving said drops; said second means adapted to confine a liquid continuous phase having a consistency to suspend said drops;

third means operatively associated with said second means for dispersing said particles and forming successively smaller drops with corresponding successively reduced number of particles in each said smaller drop; said third means comprising means for applying a varying magnetic field to said second means, the frequency of said field variations being selected according to the desired number of particles in said smaller drops, the characteristics of the particles and the internal and continuous phases.

4,417,544

DEVELOPING DEVICE

Fuminobu Nishimura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Filed Aug. 2, 1982, Ser. No. 404,492

Claims priority, application Japan, Aug. 5, 1981, 56-116514[U]; Aug. 5, 1981, 56-116515[U]

Int. Cl.³ B05B *7/06*

U.S. Cl. 118—688 **6 Claims**

1. A developing device which supplies first and second developers to a photosensitive layer formed on the surface of a photosensitive body, comprising:

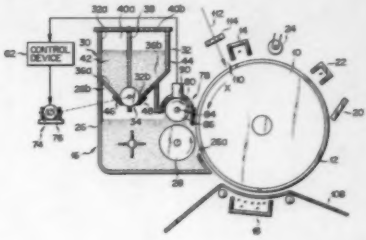
a receptacle facing the photosensitive layer to store the first and second developers therein;

supply means in the receptacle for supplying the first and second developers to the photosensitive layer; and

developer resupply means attached to the receptacle to replenish selectively the shortage of the first or second developer in the receptacle corresponding to a consumption thereof, said developer resupply means including:

a housing having a connecting port connecting with the receptacle, said housing having first and second storage chambers to store therein the first and second developers, respectively, said first and second storage chambers connected with the connecting port;

a rotating body for resupply rotatably disposed at the connecting port, said rotating body having a first portion located inside the first storage chamber, a second portion located inside the second storage chamber, and a third portion located inside the receptacle; and



first drive means connected with the rotating body for driving the rotating body selectively to rotate in one direction or in the other direction opposite thereto, said rotating body supplying the first developer from the first storage chamber to the receptacle when rotated in said one direction, and supplying the second developer from the second storage chamber to the receptacle when rotated in said other direction.

4,417,545

PACKAGE FOR THE TRANSPORTATION OF NEMATODES

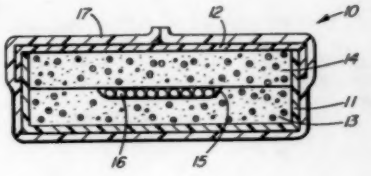
Jean R. Finney, St. John's, Canada, assignor to Memorial University of Newfoundland, Newfoundland, Canada

Filed Feb. 11, 1982, Ser. No. 347,769

Claims priority, application Canada, Sep. 21, 1981, 386306

Int. Cl.³ A01K *67/00*

U.S. Cl. 119—1 **10 Claims**



1. A shipping and/or storage package for shipping and/or storing nematodes and/or nematode eggs in their dormant state, consisting essentially of

(1) a water-impervious container having a removable cover;

(2) at least one pair of discrete, formed, substrates, each comprising an open celled, light weight foam having wicking action, said substrates substantially filling, and disposing in said container and below the cover, said foam being capable of retaining water within said foam, and when soaked in distilled water, of providing distilled water having a pH of about 5 to about 7, said pair of substrates being disposed in face-to-face relationship; and

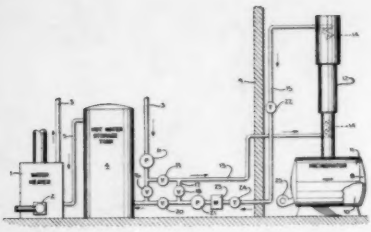
(3) at least one storage cavity at the interface between said pair of substrates for the placement therein of nematodes and/or nematode eggs in their dormant state, said wicking action of said foam serving to maintain said nematodes and/or nematode eggs moist.

4,417,546

HEAT RECOVERY SYSTEM FOR AN INCINERATOR

Gordon H. Hoskinson, 186 Mayfair Rd., Floral Park, N.Y. 11001

Filed Sep. 14, 1981, Ser. No. 302,132
Int. Cl.³ F22B 33/00
U.S. Cl. 122—20 B 9 Claims



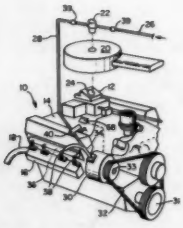
1. A heat recovery system, comprising an incinerator defining a combustion chamber to burn waste material and having a stack connected to the combustion chamber for discharging hot flue gases, a heat exchanger associated with the stack, hot water heating means including a main hot water line for circulating heated water, first pumping means disposed in said main hot water line for continuously flowing water through said line, an auxiliaty hot water line connected to the heat exchanger, second pumping means to continuously flow water through the auxiliary hot water line, and valve means connected in said main line and said auxiliary line and operable during periods when the incinerator is operating to connect said main line to said auxiliary line whereby water will pass from said main line through said auxiliary line to the heat exchanger and will be returned to said main line, said valve means being operable during periods when the incinerator is not operating to disconnect said main line from said auxilairy line whereby water will circulate separately in each of said lines.

4,417,547

ENGINE SPEED AND ENGINE LOAD RESPONSIVE FLUID INJECTION SYSTEM FOR AN INTERNAL COMBUSTION ENGINE

Toronta P. Goodman, Summit Point, W. Va., and Bruce W. Everling, Fairfax, Va., assignors to Goodman System Company, Inc., Armonk, N.Y.

Filed Nov. 17, 1981, Ser. No. 322,194
Int. Cl.³ F02M 25/02
U.S. Cl. 123—25 J 23 Claims



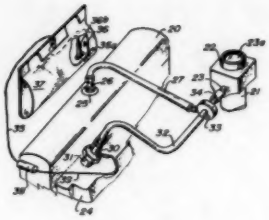
1. A system for injecting fluid into a cylinder of an internal combustion engine, said system comprising fluid injection means for introducing air to said fluid for injecting said fluid into said cylinder at a rate proportional to the flow of said air, means for supplying pressurized ambient air to said fluid injection means, control means in a responsive relation to the intake manifold of said engine for controlling the flow of air to said fluid injection means in response to pressure variations in said intake manifold, and means for varying the pressure of said air to said fluid injection means in response to pressure variations in the exhaust manifold of said engine.

4,417,548

COMBUSTION CONTROL SYSTEM AND IMPROVED ELEMENTS THEREFOR

John E. Lindberg, Point Richmond, Calif., assignor to U.S.A. 161 Developments Ltd., Berkeley, Calif.

Filed Feb. 16, 1982, Ser. No. 348,867
Int. Cl.³ F02M 25/02, 25/06
U.S. Cl. 123—25 E 36 Claims



1. A combustion control system for an engine having an intake manifold, a gas inlet opening into said intake manifold, and an exhaust conduit, including in combination:

a vortex device having a vortex chamber with a tangential inlet connected to a gas supply at substantially atmospheric pressure, a second inlet, and an axial outlet connected directly to said gas inlet opening of said intake manifold,

a reactor device having a gas inlet connected directly to said exhaust conduit for drawing gas therefrom and an outlet spaced well apart from said vortex device and connected to said second inlet of said vortex device by a conduit, said reactor device comprising

first ejector means for drawing in atmospheric air and mixing it with gas from said exhaust conduit, and

second ejector means for drawing in liquid from a source of liquid and sending it into the atmospheric air drawn in by said first ejector means.

4,417,549

SEALING ARRANGEMENT FOR WET CYLINDER LINERS

Ulrich Kazenmaier, Wendeburg, and Günter Quast, Brunswick, both of Fed. Rep. of Germany, assignors to M.A.N. Maschinenfabrik Augsburg-Nuremberg Aktiengesellschaft, Nuremberg, Fed. Rep. of Germany

Filed Mar. 5, 1982, Ser. No. 354,143
Claims priority, application Fed. Rep. of Germany, Mar. 6, 1981, 3108412
Int. Cl.³ F01P 3/02
U.S. Cl. 123—41.84 2 Claims

1. In a wet cylinder liner used with an internal combustion engine, wherein the cylinder liner has a flange which abuts the cylinder head deck of the crankcase of the engine along a contact surface disposed in spaced relation to a cooling space defined between the crankcase and liner and positioned in spaced relation with respect to the contact surface, a sealing arrangement comprising:

a straight cylindrical wall integral with and on the crankcase facing inwardly toward the cylinder liner;

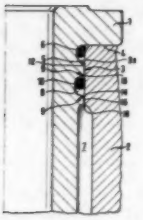
a first annular groove in the cylinder liner starting at the junction of the flange and extending toward the cooling

space, the first annular groove opening toward the straight cylindrical wall of the crankcase and terminating at a first line of contact defining a diameter equal to the diameter of the straight cylindrical wall;

a first sealing ring in the first annular groove and being compressed between the groove and straight cylindrical wall;

a guiding portion on the cylinder liner having a diameter equal to that of the straight cylindrical wall and extending a first distance from the first line of contact toward the cooling space to a second line of contact to define a guiding surface which engages the straight cylindrical wall;

a second annular groove extending from the second line of contact toward the cooling space, the second annular



groove opening toward the straight cylindrical wall and terminating at a third line of contact with the straight cylindrical wall, the second annular groove approaching the second and third lines of contact along convex surfaces;

a second sealing ring positioned in the second groove and being compressed between the surface defining the second groove and the straight cylindrical wall to isolate the first sealing ring from the cooling space, and

a second guiding portion on the cylinder liner having a diameter equal to that of the straight cylindrical wall and extending a second distance from the third line of contact toward the cooling space to a forth line of contact to define a second guiding surface which engages the straight cylindrical wall proximate the cooling space.

4,417,550

ENGINE PREHEATING APPARATUS

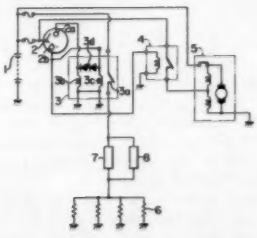
Akihiro Kobayashi, Aichi; Masashi Kida, Okazaki; Novuei Ito, Okazaki, and Yoji Kato, Okazaki, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Aug. 21, 1981, Ser. No. 294,821

Claims priority, application Japan, Aug. 28, 1980, 55-119556

Int. Cl.³ F02P *19/02*

U.S. Cl. 123—145 A **8 Claims**



1. An engine preheating apparatus comprising a glow plug mounted on the engine, an actuation circuit for flowing current through said glow plug, a starting resistor of barium titanate as a main component connected to said actuation circuit, said starting resistor having a positive temperature coefficient of resistance and a Curie point of a specific temperature where the resistance value thereof sharply increases, a normal-operation resistor connected in parallel to said starting resistor, a heat receiver placed in proximity to said starting resistor for receiving the heat from said starting resistor, and a heat conductor having a predetermined thermal conductivity for connecting said heat receiver and said starting receiver to each other.

4,417,551

VEHICLE ENGINE

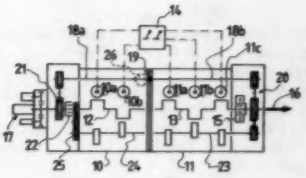
Sven-Olof Kronogard, Karstorpsvägen 31, Lomma, Sweden 23400; Clas-Olof Kronogard, Grabo, Sweden, and Hakan Kronogard, Lund, Sweden, assignors to Sven-Olof Kronogard, Lomma, Sweden

Filed Aug. 7, 1981, Ser. No. 290,936

Claims priority, application Sweden, Sep. 29, 1980, 8006807

Int. Cl.³ F02D *17/02*

U.S. Cl. 123—198 F **10 Claims**



1. A vehicle enging having a number of cylinders arranged in at least one row and provided with a fuelling system permitting selective supply of fuel to two distinct groups of cylinders within said at least one row, and further comprising:

(A) first and second aligned crank shafts each associated with the cylinders in one of said two groups,

(B) first clutch means for selectively connecting said first crank shaft with a power take-off shaft from the engine,

(C) transmission means including a shaft running in parallel to said at least one row of cylinders and engageable with said first crank shaft,

(D) second clutch means for selectively connecting said second crank shaft with said transmission, and

(E) whereby either one, or both, of said two groups of cylinders can be selectively connected to said power take-off shaft to drive the same.

4,417,552

SOUND-INSULATED INTERNAL-COMBUSTION ENGINE

Horst Walter, Gross-Denkte; Werner Ebbinghaus, and Hermann Danckert, both of Wolfsburg, all of Fed. Rep. of Germany, assignors to Volkswagenwerk A.G., Wolfsburg, Fed. Rep. of Germany

Filed Dec. 4, 1981, Ser. No. 327,505

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1980, 3046602

Int. Cl.³ F02F *7/00*

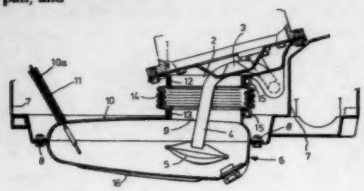
U.S. Cl. 123—198 E **4 Claims**

1. In an internal combustion engine including an engine block, an oil pan, a sound insulating capsule and a sealing gasket connecting said oil pan to an underside of said engine block; said sealing gasket having folds for permitting a relative displacement between said engine block and said oil pan during operation of said engine; said sealing gasket being supported on a lower portion of said capsule as a component thereof; said capsule being supported externally of said engine; the improvement comprising

(a) a closure plate sealingly secured to said engine block for covering said underside of the engine block;

(b) means defining an oil return opening in said closure plate;

the dimensions of said opening being small relative to length and width dimensions of said closure plate and said oil pan; and



(c) a first nipple mounted on said closure plate and a second nipple mounted on said oil pan; said nipples being in alignment with one another; said sealing gasket having end portions sealingly secured to said nipples.

4,417,553

METHOD AND APPARATUS FOR CONTROLLING THE IDLING SPEED OF AN ENGINE WHEREIN THE AMOUNT OF AIR PROVIDED TO THE ENGINE IS INCREASED BY A PREDETERMINED AMOUNT WHEN THE ENGINE SPEED BECOMES EQUAL TO ZERO

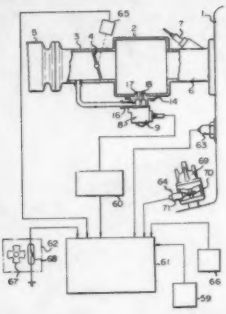
Nobushisa Ohkawa, Toyota, and Hiroshi Itoh, Nagoya, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Filed Sep. 15, 1981, Ser. No. 302,390

Claims priority, application Japan, Jan. 5, 1981, 56-000038

Int. Cl.³ F02D 1/04

U.S. Cl. 123—339 **3 Claims**



1. A method of controlling the idling speed of an engine comprising a main intake passage, a throttle valve arranged in the main intake passage, a bypass passage branched off from the main intake passage upstream of the throttle valve and connected to the main intake passage downstream of the throttle valve, a control valve arranged in the bypass passage, and a stepper motor actuating the control valve for controlling the amount of air flowing within the bypass passage, wherein said method comprises:

detecting the idling speed at which the engine is driven;

controlling a step position of the stepper motor so that said idling speed approaches a desired idling speed, and;

rotating the stepper motor by a predetermined step number in a rotating direction wherein the flow area of the control valve is increased only the first time the speed of the engine returns to zero after one of the two following events: (1) an ignition switch is turned to an off position and then to an on position and (2) a vehicle speed exceeds a predetermined value.

2. An apparatus for controlling the idling speed of an engine comprising a main intake passage and a throttle valve arranged in a main intake passage comprising:

an ignition switch for energizing said engine having on and off positions;

a bypass passage connected to the main intake passage upstream of the throttle valve and downstream of the throttle valve;

a control valve arranged in the bypass passage;

a stepper motor for actuating the control valve for controlling the amount of air flowing within the bypass passage;

means for detecting the actual idling speed of said engine;

means for controlling a step position of the stepper motor in response to said detecting means such that said actual idling speed approaches a desired idling speed; and

means for rotating the stepper motor by a predetermined step number in a rotating direction in response to said control means such that the flow area of the control valve is increased only the first time the speed of the engine returns to zero after one of the two following events: (1) said ignition switch is turned to said off position and then to said on position, and (2) a vehicle speed exceeds a predetermined value.

4,417,554

ELECTRONICALLY CONTROLLED FUEL INJECTION TIMER

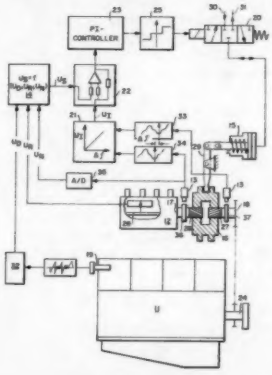
Hans Dinger, Friedrichshafen, Fed. Rep. of Germany, assignor to Motoren-und Turbinen-Union Friedrichshafen GmbH, Friedrichshafen, Fed. Rep. of Germany

Filed Jan. 18, 1982, Ser. No. 340,216

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1981, 3101167

Int. Cl.³ F02M 59/20

U.S. Cl. 123—357 **10 Claims**



1. An electronically controlled fuel injection timer means for a fuel injection pump of a piston internal combustion engine, the timer means includes control means for controlling an instant of fuel injection, means for generating a desired value of an injection setting in dependence upon operating parameters of the engine, and for providing a control signal to the control means, characterized in that

at least one sensor means is provided for sensing a measurable operating parameter relating to the combustion pressure for a working stroke of the engine and for providing an output control signal to the means for generating a desired value, whereby the generating means is controlled in dependence upon the output control signal of the at least one sensor means, and in that

the operating parameter is proportional to a rate of increase in combustion pressure in a cylinder of the engine.

4,417,555

FUEL INJECTION PUMP ARRANGEMENT

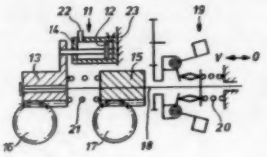
Herbert Deutschmann, and Ewald Kamleitner, both of Friedrichshafen, Fed. Rep. of Germany, assignors to Motoren-und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,383

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1980, 3001162

Int. Cl.³ F02D 17/00

U.S. Cl. 123—372 12 Claims



1. A fuel injection pump arrangement for an internal combustion engine, the arrangement comprising adjustable regulator rod means for controlling a fuel delivery setting to the internal combustion engine, the regulator rod means including a first and second regulator rod part, means for mounting the first and second regulator rod parts so as to be axially movable toward and away from each other, spring means acting upon the first and second regulator rod parts so as to provide a reactive effect on a setting member of the fuel injection pump arrangement, and means for selectively stopping one of the first and second regulator rod parts from moving, characterized in that means are provided for selectively removing a force effect of the spring means acting upon the first and second regulator rod parts,

the force effect removing means is an independent power source,

the selective stopping means includes a first cylinder piston means adapted to cooperate with one of the first and second regulator rod parts and a housing, and in that the power source includes a second cylinder piston means cooperating with the first cylinder piston means and with the spring means,

the first cylinder piston means includes an annular piston guided in the housing and connected with one of the first and second regulator rod parts and a piston means guided interiorly of the annular piston and slidable with respect to the other of the first and second regulator rod parts, and in that the other of the first and second regulator rod parts, and in that the other of the first and second regulator rod parts is operatively associated with the second cylinder piston means,

means are provided for enabling the first and second cylinder piston means to be simultaneously acted upon by a pressure medium,

the enabling means includes overflow openings provided in the annular piston,

spring means are disposed between the annular piston and the piston means, and

a cylindrical sleeve is disposed so as to float in the housing, a check ring is disposed so as to float in the housing coaxially to the cylindrical sleeve, and in that the cylindrical sleeve and check ring form a cylinder for the annular piston.

4,417,556

METHOD FOR CLOSED-LOOP CONTROL OF THE INSTANT OF IGNITION

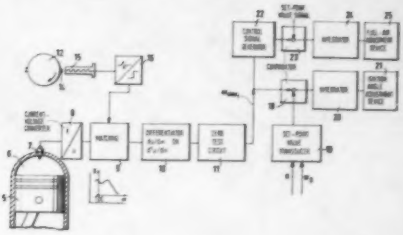
Reinhard Latsch, Vaihingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 29, 1980, Ser. No. 191,742

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1979, 2939580

Int. Cl.³ F02D 37/02

U.S. Cl. 123—425 15 Claims



1. A method for the closed-loop control of the instant of ignition in an internal combustion engine to which an operational mixture is delivered, comprising the steps of:

ascertaining the occurrence of the top dead center in sequential work cycles of at least one combustion chamber of the engine;

measuring the ionic current released during combustion of the operational mixture in the combustion chamber by an ionic current sensor;

detecting the occurrence relative to said occurrence of the top dead center of the peak of the first rising portion of a curve resulting from successively measured ionic current values within a crankshaft angle range of 0°–90° subsequent to when the ascertained top dead center occurrence in sequential work cycles of said at least one combustion chamber occurs;

generating an actual value signal corresponding to the occurrence of said peak;

generating a set-point value signal for the actual value signal;

comparing the generated actual value signal to the generated set-point value signal and generating a difference signal; and

adjusting the instant of ignition in accordance with the generated difference signal.

4,417,557

FEED AND DRAIN LINE DAMPING IN A FUEL DELIVERY SYSTEM

Richard P. Walter, Southfield, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Jul. 31, 1981, Ser. No. 289,012

Int. Cl.³ F02B 3/00

U.S. Cl. 123—467 4 Claims

1. A fuel delivery system having metering and injection modes of operation, including at least one fuel injector having a metering chamber for injecting fuel into the combustion chambers of an engine from a reservoir comprising:

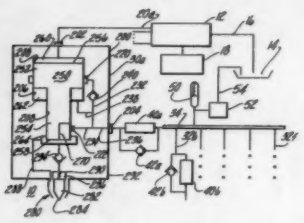
pump means for selectively applying pressurized fuel from the reservoir to at least one fuel injector during an injection mode and for selectively depressurizing during a metering mode, said pressurizing and depressurizing are performed in correspondence with the combustion process within the engine;

a feedline interconnecting the fuel injector with said pump means, wherein said feedline is characterized as having a determinable impedance;

pressure source means for establishing a pressure level of fuel intermediate the pressurizing and depressurizing pres-

sure levels applied to the fuel injector and for supplying a determinable quantity of fuel to the metering chamber; and

drain line means for carrying fuel between the fuel injector and said pressure source means including a fuel carrying conduit having an impedance which bears a preselected relationship to and different from the impedance of said feedline and having located therein flow restricting means



for restricting the flow therethrough, said flow restricting means has an impedance level to flow which bears a preselected relationship to and different from the impedance of said conduit wherein said drain line means further includes valve means, connected in parallel across said flow restricting means, for diverting fuel flow from said flow restricting means during intervals of time when fuel is flowing from said pressure source means towards a particular one of said fuel injectors.

4,417,558

FUEL FEEDING APPARATUS FOR INTERNAL COMBUSTION ENGINE

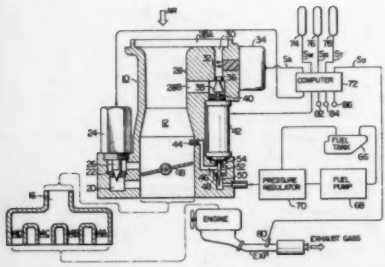
Minoru Osuga, Hitachi; Yoshishige Oyama, Katsuta, and Mamoru Fujida, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 18, 1982, Ser. No. 359,512

Claims priority, application Japan, Mar. 25, 1981, 56-40821[U]

Int. Cl.³ F02D 5/00

U.S. Cl. 123—489 **11 Claims**



1. A fuel feeding apparatus for an internal combustion engine comprising;

(a) a main intake air path connected to an upstream side of a manifold portion of intake pipes;

(b) a Venturi portion formed in said main air-intake path;

(c) a throttle valve disposed in said main air-intake path at a position downstream of said Venturi portion;

(d) a bypass air path disposed adjacent to said main air-intake path to supply bypass air from a point upstream of said Venturi portion to said Venturi portion;

(e) an air flow meter disposed in said bypass air path to detect the quantity of air flowing through said bypass air path;

(f) an air-metering valve disposed in said bypass air path at a position downstream of said air flow meter;

(g) a fuel path feeding fuel continuously from a fuel pump into said main air-intake path during operation of the engine;

(h) a fuel-metering valve disposed in said fuel path;

(i) drive means for controlling the opening of said air-metering valve and said fuel-metering valve in such a manner that said fuel-metering valve is displaced to increase the quantity of fuel flowing through said fuel path when said air-metering valve is displaced to decrease the quantity of air flowing through said bypass air path;

(j) control signal generating means applying a control signal to said drive means for controlling the opening of said air-metering valve so that the output signal of said air flow meter attains coincidence with a pre-set level;

(k) an oxygen sensor disposed in an engine exhaust gas path; and

(l) closed-loop control means for modifying the value of said pre-set level in response to the output signal of said oxygen sensor so that the rate of excess air in the engine exhaust gases can be maintained to be always equal to unity.

4,417,559

SUPERCHARGER APPARATUS FOR INTERNAL COMBUSTION ENGINE

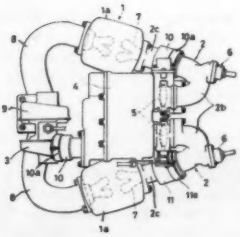
Minoru Matsuda, Chofu; Kentaro Kato, Niiza, and Masatoshi Suzuki, Urawa, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1981, Ser. No. 269,984

Claims priority, application Japan, Jun. 25, 1980, 55-85163

Int. Cl.³ F02D 23/00

U.S. Cl. 123—559 **4 Claims**



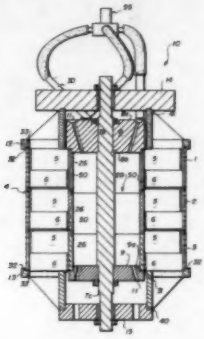
1. A supercharger apparatus for an internal combustion engine for a vehicle having an intake passage means coupled to said internal combustion engine, said intake passage means comprising a compressor, a pre-chamber on the downstream side of said compressor, two throttle valves on the downstream side of said pre-chamber, a first heat insulating elastic means coupled between said compressor and said pre-chamber and two second heat insulating elastic means coupled between each of said throttle valves and a corresponding intake port of said engine, wherein said throttle valves are disposed closer to said second elastic means than said first elastic means, and wherein the portion of the intake passage that has said pre-chamber and each of said throttle valves is supported in a floating condition by said first and second elastic means on both ends thereof.

4,417,560

INTAKE AIR BOOSTER FOR AN INTERNAL COMBUSTION ENGINE

Eugene O. Frank, Box 64, Caldwell, Id. 83605

Filed Jul. 9, 1981, Ser. No. 281,908
Int. Cl.³ F02B *33/40*
U.S. Cl. 123—559 **11 Claims**



1. An intake air booster for increasing air flow for an internal combustion engine having an intake manifold or the like comprising, in combination:

a first air passageway communicating ambient air with the engine's intake manifold,

first means for introducing air in said first passageway,

a second air passageway communicating with said intake manifold and second means including compressed air means for simultaneously and selectively increasing the air flow rate in both said first and second passageways wherein said first air passageway is concentrically disposed about said second air passageway, impeller means on said second air passageway defining said second means, rotary and stationary vane means on said first air passageway defining said first means, said impeller means connected to said rotary vane means whereby rotation of said impeller means drives said rotary vane means wherein said impeller means comprise caps disposed on top and bottom portions of said second air passageway, apertures extending through said caps from top to bottom surfaces thereof and said apertures angled relative to said top and bottom surfaces whereby air impinging therethrough causes a rotative reaction by said cap

whereby upon demand, the air flow rate is increased in the manifold.

4,417,561

METHOD AND APPARATUS FOR AUTOMATICALLY CHANGING AND DISPOSING OF USED ENGINE OIL

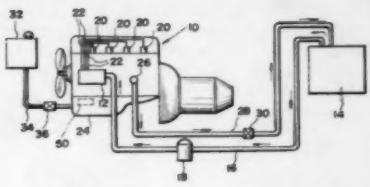
Seishi Yasuhara, Yokosuka, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 27, 1980, Ser. No. 153,666
Claims priority, application Japan, May 26, 1979, 54-64586; Jul. 11, 1979, 54-86830
Int. Cl.³ F02B *13/00*
U.S. Cl. 123—575 **11 Claims**

1. In an internal combustion engine for an automotive vehicle which can operate on a fuel/oil mixture, the engine including an oil pan containing oil therein, a lubricant system which is so constructed and arranged as to use oil in the oil pan to lubricate moving parts of the engine, and a fuel system having a fuel tank,

a system for automatically changing oil and disposing of used oil comprising:

oil conduct means, including an oil conduct conduit having one end communicating with a portion of the lubricant system and the other end communicating with the fuel tank, for conducting a portion of used oil flowing through the lubricant system during engine operation, including the time when the automotive vehicle is running, to the fuel tank, the portion of used oil conducted from the lubricant system



being mixed with fuel within the fuel tank to form a fuel/oil mixture on which the automotive vehicle can operate;

an oil tank for storing new oil; and

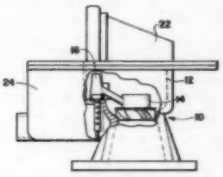
oil supply means responsive to the level of oil in said oil pan for supplying new oil from said oil tank to said oil pan.

4,417,562

CARBURETOR MIXTURE CONTROL APPARATUS

Arthur E. Dalke, 11814 E. 36th St., Tulsa, Okla. 74145

Filed Jun. 8, 1981, Ser. No. 271,701
Int. Cl.³ F02M *29/02*; F02B *31/00*
U.S. Cl. 123—592 **2 Claims**



1. A carburetor comprising:

(a) at least one venturi tube;

(b) a booster venturi located within said venturi tube; and

(c) a vane means associated with said booster venturi to produce centrifugal motion in the air passing between the outside of said booster venturi and the inside of the venturi tube, wherein said vane means is a plurality of radial vanes sloped at about 45° angle to the direction of the air flow and located within the annulus formed by said booster venturi and said venturi tube.

4,417,563

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Durvis W. Brodie, 225 West 1st Street, Winkelman, Ariz. 85292

Filed Aug. 17, 1981, Ser. No. 293,227
Int. Cl.³ H05B *37/02, 39/04*
U.S. Cl. 123—606 **4 Claims**

1. In combination with an internal combustion engine including

a housing,

at least a pair of combustion chambers formed in said housing,

passage means formed in said housing for communicating a combustible mixture to said combustion chambers and for transporting exhaust gases therefrom,

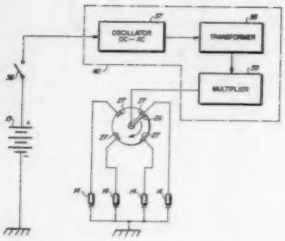
spark plugs carried by said housing for intermittently igniting said combustible mixture in said combustion chambers,

a distributor for accepting and intermittently applying igni-

tion spark potential to each of said spark plugs in timed relationship with said engine, and

a low voltage source of direct current,

ignition system means electrically interposed between said direct current source and said distributor for receiving and transforming current from said current source to ignition spark potential of sufficient magnitude to initiate an arc across the spark gap of said spark plugs, said ignition system means delivering a continuous flow of ignition spark potential to said distributor during operation of said internal combustion engine and including



(a) oscillator means for receiving current from said source of direct current potential and producing a low voltage high frequency alternating current signal;

(b) transformer means for receiving said low voltage high frequency current signal produced by said oscillator means and stepping up the voltage thereof; and

(c) means for receiving said stepped up voltage signal produced by said transformer and rectifying said signal, said rectified signal being continuously applied to said distributor during operation of said internal combustion engine.

4,417,564

CENTERING AND WORKING GEMSTONES

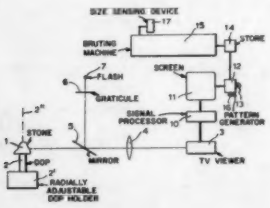
John C. Lawrence, 50, Heathfield Rd., Acton, London; Andrew D. G. Stewart, The Old Rectory, Ashampstead, Reading, Berkshire, and John S. Dodson, 20, Leigh Rd., Cobham, Surrey, all of England

Filed Jun. 1, 1981, Ser. No. 269,271

Claims priority, application United Kingdom, Jun. 4, 1980, 8018349; Apr. 6, 1981, 8110751

Int. Cl.³ B28D *5/00*

U.S. Cl. 125—30 R **11 Claims**



1. A method of centering a rough gem stone so that the stone can be worked by a process which involves rotating the stone about an axis on which the stone has been centered, the method comprising:

providing an image of said stone, as seen generally normal to an axis through said stone;

comparing said image with the parameters of a reference shape which corresponds to the shape of a stone that can be cut from said rough stone, said image and said reference shape being of fixed but alterable relative sizes;

altering the relative sizes of said image and said reference shape until the reference shape parameters correspond to the stone that can be cut from said rough stone;

providing at least one further image of said stone with said rough stone in a different relative angular position about said axis;

comparing said further image with said parameters;

if said reference shape is too large, reducing the size of the said reference shape; and

using indications derived from said altering to center said rough stone.

4,417,565

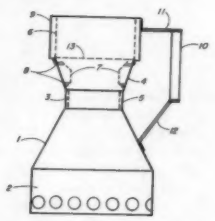
FAST AND EASY CHARCOAL STARTER

Walter Karpinia, 600 W. Lakeridge Dr., Eagle River, Ak. 99577

Filed May 10, 1982, Ser. No. 376,307

Int. Cl.³ B26D *1/32*

U.S. Cl. 126—25 B **4 Claims**



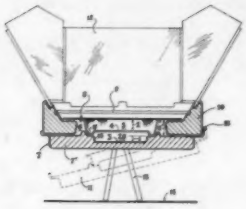
1. A Fast and Easy Charcoal Starter comprising: a first tapered bell housing having a bottom and a top; wherein said top is smaller in diameter than said bottom; said bottom of the first tapered bell housing having a first verticle skirt fixedly attached to the first tapered bell housing, said first verticle skirt having at least one combustion air hole provided therein; the top of said first bell housing having a second verticle skirt being of the same diameter as the first tapered bell housing being fixedly attached thereon; A second tapered bell housing being of opposite configuration to the first tapered bell housing, having a top and a bottom, the top of the second tapered bell housing being larger in diameter than the bottom of the second tapered bell housing; said second tapered bell housing also having top and bottom verticle skirts fixedly attached to said second tapered bell housing similar in nature to the verticle skirts on the first tapered bell housing, said bottom verticle skirt of the second tapered bell housing being slidably connected to the top verticle skirt of the first tapered bell housing thereby forming a contiguous unit; means for fixedly securing the top verticle skirt of the first tapered bell housing to the bottom verticle skirt of the second tapered bell housing; a venturi pipe fixedly attached inside the second tapered bell housing, said venturi pipe having a top tapered end and a bottom tapered end generally comforming to the taper of the second tapered bell housing and being smaller in diameter than the second tapered bell housing thereby allowing the passage of air therebetween, the top and bottom tapered ends of said venturi pipe being fixedly connected by a restricted pipe whereby the entire assenbly forms a venturi, the diameter of the restricted pipe being smaller than the diameter of the connected verticle skirts of the first and second tapered bell housings; means to fixedly attach said venturi pipe to said second tapered bell housing whereby said venturi pipe is suspended therein; a grate placed in the second tapered bell housing immediately above the venturi pipe for the support of the charcoal.

4,417,566

SOLAR OVEN ACCESS DOOR

Hyman A. Steinberg, 7200 NW. 78th St., Tamarac, Fla. 33319

Filed Nov. 9, 1981, Ser. No. 319,735
Int. Cl.³ F24J 3/02
U.S. Cl. 126—451 9 Claims



1. In a solar oven, including an outer body structure with an opening at one end, means for concentrating sunlight into said opening wherein a blackened, fixed metallic plate converts sunlight to heat, the reverse side of said plate comprising the inner, heated surface of a compartment for the preparation of food held within a removable and deformable tray, and an access door for the insertion and removal of said tray, said access door consisting of an outer casing hinged to said body structure, a body of insulation within said casing, and an inner door surface configured to position and support said tray within said compartment and to bring said tray into contact with said metallic plate when said door is in closed position, the improvement comprising:

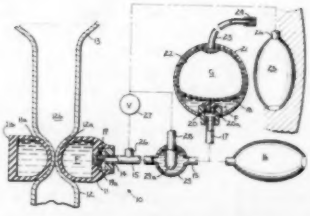
a depressed area within said inner door surface, extending below the plane of the bottom edge of said tray, to permit the deformation and intrusion of the central portion of said tray into said depressed area.

4,417,567

ARTIFICIAL SPHINCTER

Robert E. Trick, Racine, Wis., assignor to Medical Engineering Corporation, Racine, Wis.

Continuation-in-part of Ser. No. 292,051, Aug. 12, 1981, Pat. No. 4,386,601. This application Nov. 17, 1981, Ser. No. 322,285
Int. Cl.³ A61B 17/00
U.S. Cl. 128—1 R 5 Claims



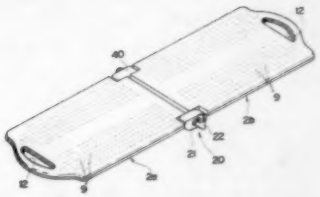
1. In an artificial sphincter for controlling the flow of fluid through a body passage which comprises an inflatable occlusion means which is normally inflated with hydraulic fluid to close the body passage, a source of pressurizing fluid for keeping the occlusion means inflated, pump means for sucking hydraulic fluid from the inflatable occlusion means to cause it to deflate and the body passage to open, and tubing connecting the pump means to the inflatable occlusion means and to the source of pressurizing fluid to form a closed system; the improvement which comprises pressure intensifying means for increasing the pressure in the occlusion means and preventing a temporary increase in fluid pressure in the body passage from causing fluid to leak past the occlusion means, said pressure intensifying means comprising a normally open pressure actuated valve for cutting off flow from the occlusive means to the pump means and the source of pressurizing fluid and a second pump means containing pressurizing fluid and operatively connected by a second length of tubing to both the pressure actuated valve and the occlusion means so that when said second pump means is operated both additional fluid is introduced into the occlusion means to increase the pressure therein and the pressure actuated valve is closed to prevent the additional fluid from leaving the occlusion means until the increased pressure is no longer needed.

4,417,568

AIR BUBBLE GENERATING APPARATUS FOR USE IN BATHTUB

Nobuyuki Nozawa, and Toshio Mikiya, both of Tokyo, Japan, assignors to Nitto Kohki Co., Ltd., Tokyo, Japan

Filed Jul. 31, 1981, Ser. No. 288,932
Claims priority, application Japan, Aug. 1, 1980, 55-108314[U]
Int. Cl.³ B01F 3/04
U.S. Cl. 128—33 11 Claims



1. An air bubble generating apparatus for use in a body of hot water such as a bathtub or the like, and comprising:

a pair of hollow air bubble generating boards each having an upper surface with a large number of bubble openings therein, said boards each having an edge in spaced opposed relationship to the corresponding edge of the other board and with the upper surfaces facing in the same direction; and

an air supplying member rotatably connected to said air bubble generating boards at said spaced opposed edges for hinging said boards to each other for folding about an axis along said spaced opposed edges, said air supply member having means for receiving air from an air source and supplying the air into the hollow interior of each of said air bubble generating boards.

4,417,569

UNIVERSAL FUNCTIONAL SHOULDER ORTHOSIS

Joseph Brudny, New York, N.Y., assignor to Alexander Mencher, Forest Hills, N.Y.

Filed Oct. 19, 1981, Ser. No. 312,228
Int. Cl.³ A61F 3/00, 5/01
U.S. Cl. 128—77 10 Claims

1. An orthotic device for the human upper limb comprising:

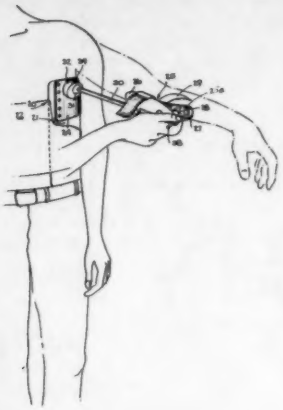
(a) a standard to support the device, and attaching means to secure said standard between the arm and body of the patient at the chest area;

(b) a rod member and connecting means operative between the rod at its proximal end and said standard, said connecting means being adapted to position the rod along a desired, fixed, and functional spatial arm position;

(c) elbow supporting means attachable to the arm of the patient and being rotatably and slideably mounted on said rod, said elbow supporting means having an intermediate opening for support and projection of patient's olecranon process;

(d) first control means between said rod and elbow supporting means to adjust and releasably lock the adjusted longi-

tudinal position of said elbow supporting means on said rod when applied to the patient whereby to control needed pressure application to the projecting portion of said olecranon process for stabilizing a malfunctioning arm by transmission of pressure proximally to and axially of the arm to provide for and render full elbow flexion,



full forearm supination and pronation, and functional forearm extension in said locked longitudinal position; and

(e) second control means between said rod and elbow supporting means to releasably lock said adjusted and locked longitudinal position of the elbow supporting means on said rod against rotary movement.

4,417,570

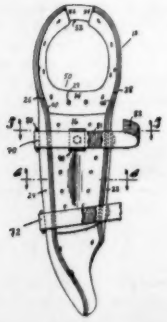
LOWER ARM BRACE

Alan Finnieston, 2480 W. 82 St., Hialeah, Fla. 33016

Filed Dec. 15, 1981, Ser. No. 330,801

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—87 R **5 Claims**



1. A lower arm brace comprising an elongate, outer member, having a base portion and curved side walls to form a generally U-shaped cross section,

one end of the base portion being extended to form a wrist extension being angled with respect to the base portion so as to maintain the hand of the wearer at an angle with respect to the forearm, the hand being turned inwardly towards the body of the wearer,

the other end of the base portion extending to a point adjacent the elbow of the wearer said other end of the base having extensions on the side walls which project above the lateral side edges of the side walls, and curve inwardly towards each other, said extensions being of a reduced width so as to partially surround the upper arm above the elbow without surrounding the elbow with the ends of said extensions being in closely spaced relation, said extensions being flexible to fit various sized upper arms and serving to prevent the brace from sliding with respect to a predetermined position on the arm,

an inner member having a base portion and curved side walls to form a generally U-shaped cross section,

said inner and outer members interfitting to be positioned in embracing relation of the inner and outer surface of the lower arm between the elbow and wrist and

means to hold the members releasably and adjustably about the lower arm in clamping sleeve-like relation.

4,417,571

PROSTHETIC CEMENT SPACER AND METHOD FOR USING SAME

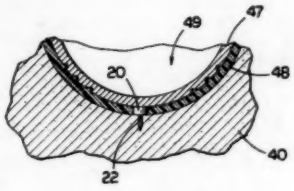
Carl L. Nelson, 4301 W. Markham, Little Rock, Ark. 72201; Darrel W. Haynes, 11200 Bainbridge Dr., Little Rock, Ark. 72212, and Michael J. Weber, Rte. 3, Box 410B, Little Rock, Ark. 72211

Division of Ser. No. 54,027, Jul. 2, 1979, Pat. No. 4,285,071.

This application Nov. 10, 1980, Ser. No. 205,455

Int. Cl.³ A61F *1/24*

U.S. Cl. 128—92 B **1 Claim**



1. A prosthetic cement spacer for controlling the thickness of cement applied between a prosthetic insert and a supporting member to which the insert is to be secured, such as a natural bone, said prosthetic cement spacer comprising:

a standoff body fabricated from biocompatible acrylic bone cement which is solid and substantially cylindrical and having a top surface and a base surface; and

means for anchoring said standoff body to said supporting member, said anchoring means including a pointed wire having a received portion secured within said standoff body and an extending portion free of said standoff body, the length of said free portion being at least as great as the length of said received portion, said extending portion extending outwardly from said base surface, and being substantially concentric to said standoff body.

4,417,572

RESTRAINED PATIENT EXCESSIVE MOVEMENT INDICATING SAFETY DEVICE

Frank H. Green, Rushville, Ind., assignor to David L. Green, Bratenahl, Ohio, a part interest

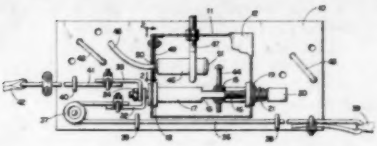
Filed Dec. 31, 1980, Ser. No. 221,893

Int. Cl.³ A61F *13/00*; A61B *5/10*

U.S. Cl. 128—134 **2 Claims**

1. An apparatus for detecting body movements of abnormal amplitude by patients restrained in bed with conventional strap or harness members, said apparatus comprising a base, a moveable member mounted for movement on the base, a push-button actuated switch means operable to activate an alarm when its push-button is depressed, said means including a switch being mounted on said base adjacent said moveable member with the axis of motion of its push-button parallel to the axis of

motion of said moveable member, an abutment carried by said moveable member intermediate its ends and positioned to engage and depress said push-button upon a predetermined movement of said moveable member, resilient means biasing said moveable member in a direction spacing said abutment from the push-button, and attaching means for joining said moveable member to said conventional strap or harness members to thereby exert a motion producing force on said moveable member which is resisted by said resilient means and which motion is a direct function of the tensional force applied to the strap or harness members by the movement of the patient; said push-button actuated switch being a conventional,



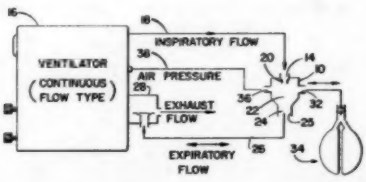
hand-held push-button, call switch, said moveable member having a threaded portion, and a correspondingly threaded element received upon said threaded portion, said resilient means being a compression spring that encircles said threaded portion and is bottomed on a portion of said base and biases said threaded element from said base portion, the position of said element on said threaded portion thus determining the biasing force exerted by said spring on said moveable member; said switch having a cable extending therefrom which is removably mounted on said base, said base further including a sidewall having a cable receiving slot, said sidewall further including a moveably mounted gate, adjacent said slot, that lockingly engages said cable.

4,417,573

PATIENT ADAPTOR FOR MEDICAL VENTILATOR

Douglas F. De Vries, Redlands, Calif., assignor to Bear Medical Systems, Inc., Riverside, Calif.

Filed Jul. 2, 1981, Ser. No. 279,957
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.25 **1 Claim**



1. A ventilator of the type having an inspiratory flow path, an expiratory flow path, a patient adaptor connected therebetween and supply means for providing a substantially continuous flow of respiratory gas therethrough, said patient adaptor having an inlet fluidically connected to said inspiratory flow path, an outlet fluidically connected to said expiratory flow path, and patient connection means fluidically connected to said inlet and said outlet for fluidly coupling the patient adaptor to the breathing passages of a patient, wherein the improvement comprises:

a gas flow accelerating nozzle in said patient adaptor within said inlet such that substantially all gas flow through said inlet passes through said nozzle;

a chamber in said adaptor having an inlet opening and an outlet opening, said nozzle fluidly connected to said inlet opening, said chamber being in fluid communication with said patient connection means;

a throat in said adaptor downstream of said chamber and in alignment with said nozzle coupling said chamber outlet opening to said outlet;

said supply means providing said substantially continuous flow of gas within a range that would provide a depressed pressure in said chamber equal and opposite to a back pressure at said outlet opening caused by the pneumatic resistance of said continuous supply gas flow through said expiratory flow path; and

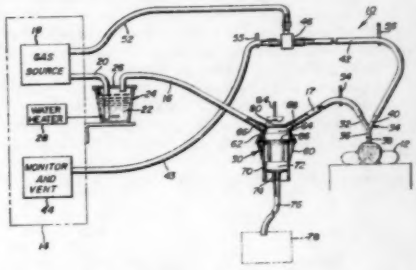
whereby said nozzle and said throat are internally dimensioned and said continuous flow of said supply means is selected such that said back pressure is substantially completely offset by the depressed pressure in said chamber created by the accelerated flow of gas through said nozzle.

4,417,574

LIQUID DRAIN FOR PATIENT BREATHING APPARATUS

Daniel A. Taloan, University City, Mo.; Robert E. Phillips, Studio City, Calif., and Alan B. Ranford, Des Peres, Mo., assignors to Sherwood Medical Company, St. Louis, Mo.

Filed May 3, 1982, Ser. No. 373,940
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—205.12 **12 Claims**



1. A liquid drain for a patient breathing system in which gas is supplied to a patient comprising housing means including an upper hollow portion adapted for connection in fluid communication with said breathing systems and for receiving liquid precipitation from the system, a lower hollow portion adapted to receive liquid precipitation from said upper portion, and liquid permeable, gas impermeable barrier means including a first layer of hydrophilic material which is gas permeable when dry and liquid permeable and gas impermeable when wetted by a liquid, and a water soluble second layer on a side of said first layer which is substantially gas impermeable to prevent gas to flow through said barrier when said second layer is dry but is dissolvable when precipitated liquid contacts it, said barrier means being disposed between said upper and lower portions so that liquid precipitation is flowable through said barrier means to said lower portion from said upper portion but said barrier means prevents gas flow to said lower portion.

4,417,575

RESPIRATORS

Joseph R. Hilton, Surrey, and John D. Wood, Hertfordshire, both of England, assignors to Racal Safety Limited, Middlesex, England

Filed Jun. 22, 1981, Ser. No. 276,190
Claims priority, application United Kingdom, Jul. 30, 1980, 8021879
Int. Cl.³ A62B *7/10*
U.S. Cl. 128—206.19 **18 Claims**

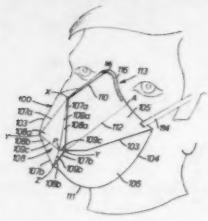
1. A generally cup-shaped filtering facepiece (100) formed of

flexible filtering material adapted to cover the nose and mouth of a user, said facepiece comprising

(a) convergent generally frusto-conical side wall means (**105, 106**) having at its large end a peripheral free edge (**104**);

(b) end wall means (**108**) closing the smaller end of said side wall portion, thereby to define a pocket for receiving the nose and mouth of the user with said peripheral edge extending over the nose and under the chin of the user, said end wall means including

(1) a plurality of end wall panels (**108*a*, 108*b***) foldably connected with said side wall means by four first fold lines (**107*a*, 107*b***) that are interconnected by four apices



(X, Y, Z), respectively, said end wall panels being connected with each other by central fold line means (**109*a*, 109*b***) that extend between a pair of opposite apices (X, Z), thereby to define between said four interconnected fold lines a generally pyramidical quadrilateral region (**108**) having four triangular panels;

(2) said end wall panels being folded inwardly about said four interconnected fold lines to cause said generally pyramidical quadrilateral region to extend reversely within said pocket at the closed end of the facepiece; and

(c) means (**114**) for attaching said facepiece to the wearer's head.

4,417,576

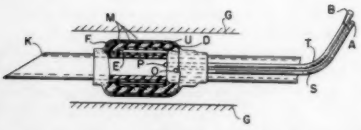
DOUBLE-WALL SURGICAL CUFF

Ostap E. Baran, 219 E. 12th St., New York, N.Y. 10003

Filed Feb. 25, 1982, Ser. No. 352,124

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—207.15 **7 Claims**



1. A surgical cuff for introduction into an integral body passage comprising:

(A) A tubular base member;

(B) An imperforate flexible inflatable tubular inner cuff member having its outer ends connected to said tubular base member;

(C) a flexible distensible tubular outer cuff member having its outer ends connected to said tubular base member, the proximal outer end of said outer cuff member being connected to said tubular base member at a given distance from the proximal outer end of said inner cuff member and the distal outer end of said outer cuff member being connected to said tubular base member at a distance from the distal outer end of said inner cuff member which is substantially the same as said given distance, the wall of said outer cuff member being multiperforated at spaced points;

(D) A sponge-like material in the space between said inner and outer cuff members and adapted to absorb a surgical fluid and then expel said fluid when compressed, said sponge-like material comprising a layer having a substantially uniform thickness;

(E) First passage means communicating with the space between said inner cuff member and outer cuff member for introducing a surgical fluid into said space for absorption for said sponge-like material; and

(F) Second passage means communicating with the space between said inner cuff member and said tubular base member for inflating said inner cuff member to displace wall portions thereof toward the wall of said outer cuff member;

(G) Whereby the spacing between the opposed walls of the inner and outer cuff members is reduced to uniformly compress said sponge-like material and thereby transmit absorbed surgical fluid outwardly through the perforations of the wall of said outer cuff member; and

(H) Whereby said flexible inner cuff member may be further expanded to gently press said flexible outer cuff member, via said sponge-like material, against the wall of the integral body passage to close the passage; and

(I) Whereby said sponge-like material also functions like a buffer and smooths out the application of the pressure against said wall of the body passage and thereby reduces the possibility of ischemic necrosis of the integral body passage; and

(J) Whereby when said inner cuff member is deflated said perforations of the wall of said outer cuff member are closed preventing backflow of said surgical fluid and thereby precisely controlling the amount of said surgical fluid transmitted around said outer cuff member.

4,417,577

GRAVITATIONAL FLOW SYSTEM FOR THE SEQUENTIAL ADMINISTRATION OF MEDICAL LIQUIDS

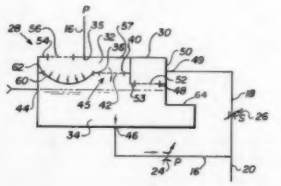
Joseph N. Genese, Waukegan, and Andrew J. Muetterties, Mundelein, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Continuation-in-part of Ser. No. 167,948, Jul. 14, 1980, Pat. No. 4,316,460, which is a continuation-in-part of Ser. No. 16,461, Feb. 28, 1979, Pat. No. 4,256,104. This application Jan. 9, 1981, Ser. No. 223,642

The portion of the term of this patent subsequent to Feb. 28, 1997, has been disclaimed.

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—81 **9 Claims**



1. A combined air barrier and liquid sequencing valve for the sequential administration of a primary liquid and a secondary liquid comprising:

a housing divided into three or more chambers by a plurality of partition members;

one of said partition members being disposed substantially horizontally within said housing so as to divide said housing into first and second chambers and to seal said first chamber from said second chamber;

said first chamber in said housing having an inlet port incorporated therein for the passage of primary liquid into said first chamber, and an outlet port incorporated therein for the passage of said primary liquid from said first chamber

into the second chamber, said outlet port from said first chamber including a hydrophilic membrane incorporated therein and covered thereby for the prevention of air movement between said first chamber and said second chamber when said hydrophilic membrane is moistened;

an inlet port to said second chamber for the admission of secondary liquid and a plurality of outlet ports from said second chamber for the passage of primary and secondary liquid; and

an air capturing pocket proximate said hydrophilic membrane covering said outlet port from said first chamber to said second chamber, said air capturing pocket being constructed and arranged for the reception of residual air within said second chamber proixmate said hydrophilic membrane when said secondary liquid is dispensed into said second chamber whereby the flow of said primary liquid is interrupted for so long as the pressure of said secondary liquid is greater than that of said primary liquid;

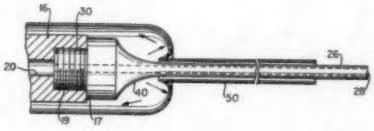
said air capturing pocket being defined as the area below said outlet port from said first chamber to said second chamber, enclosed on one side by a third chamber extending at least partially downward below said horizontal partition, said third chamber having an inlet port from said second chamber incorporated at its base and sealed by a hydrophilic membrane whereby air may be entrapped below said outlet between said first and second chambers during dispensing of said primary liquid, said third chamber further having an outlet port positioned above said inlet port and opening out of said housing whereby secondary liquid may pass upwardly through said inlet port into said third chamber and out of said outlet port during dispensing of said secondary liquid.

4,417,578

ULTRASONIC TRANSDUCER WITH ENERGY SHIELDING

Anton Banko, The Bronx, N.Y., assignor to Surgical Design, Long Island City, N.Y.

Filed Mar. 20, 1981, Ser. No. 245,707
Int. Cl.³ A61B *17/00*
U.S. Cl. 128—303 R **9 Claims**



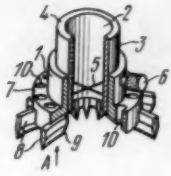
1. In an ultrasonic instrument comprising for converting electrical energy into vibratory mechanical energy, acoustic impedance transformer means connected to said energy converting means and an elongated work piece having a non-linear transition region at one end which is connected to said transformer means and a work tip at the other end, the transformer means and the transition region converting the vibratory energy into longitudinal motion which is transmitted along the work piece to the work tip with there being mechanical energy radiating outwardly from the transition region, and shield means located adjacent and surrounding said transition region and at least a portion of said elongated work piece toward said work tip and spaced away from the entirety thereof, said shield means being generally concentric with said portion of the elongated work piece which it surrounds to form a passage therebetween and having a non-linear region opposing said non-linear transition region for reflecting the mechanical energy radiated from said transition region back toward said converting means and in a direction away from the work piece and the passage between the elongated portion of the work piece and the shield means.

4,417,579

DEVICE FOR MARKING OUT THE CORNEA IN OPHTHALMOSURGICAL OPERATIONS

Sergei A. Soloviev; Svyatoslav N. Fedorov; Vitaly P. Osetsky, all of Moscow, U.S.S.R., and Valery V. Durnev, deceased, late of Moscow, U.S.S.R. by Tamara S. Durneva, administratrix, assignors to Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza, Moscow, U.S.S.R.

PCT No. PCT/SU80/00140, § 371 Date Apr. 16, 1982, § 102(e) Date Apr. 16, 1982, PCT Pub. No. WO82/00584, PCT Pub. Date Mar. 4, 1982
PCT Filed Aug. 22, 1980, Ser. No. 373,492
Int. Cl.³ A61F *9/00*
U.S. Cl. 128—303 R **6 Claims**



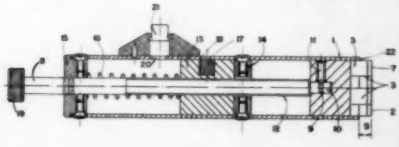
1. Means for marking out the cornea in ophthalmosurgical operations, characterized in that said means contains a body **1** in the form of a bush having a central hole **2**, said central hole accomodating a sighting aligning device **3**, and plate means **8** provided at one of the bush ends in the planes square with the plane of said sighting device **3** and further said plate means adapted to contour to the cornea being marked out, while the face edges **9** of the plates **8** are curved and their thickness is so selected that, upon applying a preset force thereto, said edges would cause elastic non-destructive deformation of the cornea, whereas the mutual arrangement of the plates depends upon the required arrangement of incisions made during operation.

4,417,580

TISSUE PERFORATOR

Alfons Birchmeier, Zürcherstrasse 8, CH-8952 Schlieren, Switzerland

Filed Dec. 23, 1980, Ser. No. 220,168
Claims priority, application Switzerland, Dec. 21, 1979, 11370/79
Int. Cl.³ A61B *17/32*
U.S. Cl. 128—315 **2 Claims**



1. A tissue perforating device, for use in the treatment of body injuries of a person resulting from bites or stings of poisonous animals,

comprising in combination,

an elongated hollow holding member,

a knife head normally disposed inside said holding member and being movable in opposite directions along said holding member, and operable to be rapidly advanced in one of said directions to project out of said holding member and adapted to move towards said body, and including at least two knives arranged side by side in with other knives off-set in relation to them, all the knives being substantially parallel to each other,

a compression spring,

a tensioning arrangement for placing the knife head under tension against the action of said spring thereby keeping it in the tensioned condition and a releasing arrangement operative for releasing the tensioned knife head so that it is abruptly moved in said one direction under the action of the compression spring,

the cutting edge of each knife being substantially rectilinear and substantially perpendicular to said one direction whereby, when said knife head is rapidly moved in said one direction, the knives will penetrate the tissue of the body and make therein a plurality of substantially parallel incisions.

4,417,581

CORNEAL ELECTRODE FOR ELECTRORETINOGRAPHY

William W. Dawson, Gainesville, Fla., assignor to The University of Florida, Gainesville, Fla.

Continuation of Ser. No. 41,777, May 23, 1979, abandoned. This application Oct. 7, 1980, Ser. No. 194,936

Int. Cl.³ A61B 5/04

U.S. Cl. 128—639 10 Claims

1. Corneal electrode for use in electroretinography comprising a yarn of electrically conductive fibers, means for electrically conductively attaching one end of said yarn to a device for measuring electrical potential, and the other end of said yarn comprising separate independent free ends of said fibers said free ends being unconnected to each other and of such dimension and material to permit contact with a surface film of a cornea without substantial abrasive effect thereon.

4,417,582

RESOLUTION MEASURING DEVICE FOR ACOUSTICAL IMAGING SYSTEMS AND METHOD OF USE

William S. N. Trimmer, Belle Mead, and David H. R. Vilkomerson, Princeton, both of N.J., assignors to Technicare Corporation, Solon, Ohio

Filed Aug. 5, 1981, Ser. No. 290,266

Int. Cl.³ A61B 10/00

U.S. Cl. 128—660 8 Claims

1. A sonically imaged device for the measurement of acoustical resolution of a sonic transducer which receives acoustical energy of a given wave length comprising:

a housing which contains the said sonic transducer, at least a first contorted filament which reflects acoustical energy of said given wave length; and

means for supporting said first contorted filament.

4,417,583

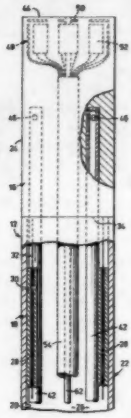
APPARATUS AND METHOD OF INTERNAL EXAMINATION OF GASTRO INTESTINAL TRACT AND ADJACENT ORGANS

Nabil R. Bechai, 65 Knighton Dr., Toronto, Ontario, Canada M4A 1V9, and Alan J. Cousin, 186 Johnson Ave., Toronto, Ontario, Canada M2N 1H3

Continuation of Ser. No. 135,391, Mar. 31, 1982, abandoned. This application Jun. 30, 1982, Ser. No. 393,938

Int. Cl.³ A61B 10/00

U.S. Cl. 128—660 8 Claims



1. A probe suitable for use in internally inspecting a gastro intestinal tract and adjacent organs comprising a head connected to a flexible cable, first means on said probe to provide an image of the tract in advance of said probe, an ultrasound array mounted on said head and including a plurality of transducers circumferentially spaced around said head, transmitting means to transmit signals between said array and a processing device to produce an ultrasound image of said tract and fluid outlet means on said head to deliver fluid directly to said tract surrounding said head to acoustically couple said array to said wall and enable displacement of said probe along said tract whilst maintaining said acoustic coupling.

4,417,584

REAL-TIME MEASURING METHOD AND APPARATUS DISPLAYING FLOW VELOCITIES IN A SEGMENT OF VESSEL

Dominique Cathignol, Genas, and Jean-Yves Chapelon, Saint-Etienne, both of France, assignors to Institut National de la Sante et de la Recherche Medicale, Paris, France

Filed May 19, 1982, Ser. No. 379,978

Claims priority, application France, May 25, 1981, 81 10833

Int. Cl.³ A61B 10/00

U.S. Cl. 128—663 12 Claims

1. A method of real-time measurement and display of flow velocities using a Doppler effect ultrasonic velocimeter comprising the steps of:

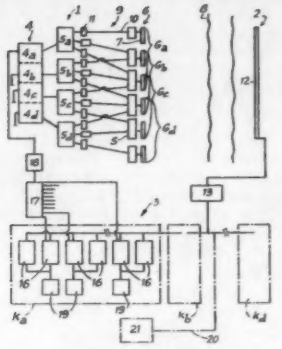
simultaneously generating from noise generator means a number m of pseudorandom noise signals, coded independently one from the other,

applying said noise signals simultaneously to a transmitter composed of physically separated transducers to transmit m ultrasonic beams,

interposing, between said noise generator means and the transducers, means for separating the different beams, to define m measuring lines pointed in the direction of the area to be scanned,

collecting reflected echos from said area to be scanned on a receiver,

applying signals representing said reflected echos to amplifier means having m groups of dual correlators, each of said m groups of dual correlators being associated with a corresponding one of said m noise signals,



applying to said dual correlators the noise signal corresponding to the group associated therewith, said noise signal being applied from the noise generator means and transmitted by a time-delay circuit in order to obtain for each line n separate measurement points, and

applying said n measurement points of the m measuring lines to display means for displaying an image of nxm points.

4,417,585

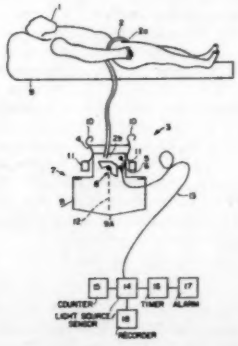
LIQUID MONITOR

Ulrich A. Frank, 945 Stuart Rd., Princeton, N.J. 08540

Filed Jul. 30, 1981, Ser. No. 288,658

Int. Cl.³ A61B 5/00; G01F 3/24

U.S. Cl. 128—668 8 Claims



1. Apparatus for measuring a liquid comprising:

a conduit having an inlet for receiving the liquid and having an outlet;

a pivotally mounted bistable receptacle assembly having first and second open ended liquid-receiving recesses, spaced from one another;

said bistable receptacle assembly having first and second stable positions wherein said first and second recesses are respectively positioned beneath the outlet of said conduit;

the recess positioned beneath said outlet being retained in the liquid receiving position by the recess displaced from said outlet until a predetermined quantity of liquid is collected therein and having a configuration which moves the receptacle to position the recess displaced from said outlet to the position beneath said outlet and displace the recess presently containing liquid away from said outlet when the quantity of liquid surpasses said predetermined level, whereby the last-mentioned recess dispenses its contents, each of said recesses having a first portion for initially receiving liquid which first portion is shaped to locate the center of gravity of the liquid filling said first portion to be coincident with an imaginary vertical line passing through the pivotal mounting of said bistable receptacle assembly, so that the liquid filling said first portion is prevented from tilting the bistable receptacle as the first portion of the recess is being filled and regardless of the weight of its contents;

each of said recesses further having a second portion for receiving liquid once the first portion thereof is filled, said second portion being shaped to displace the center of gravity of the liquid away from said imaginary line as said second portion is being filled to permit the bistable receptacle to tilt and thereby move the recess being filled away from said outlet.

4,417,586

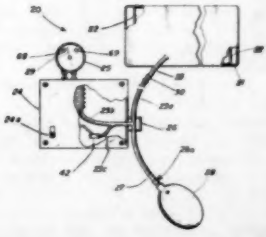
BLOOD PRESSURE MEASURING DEVICE

Warren R. Jewett, Tucson, Ariz., assignor to Vit Vet Research Group, Inc., Marion, Ind.

Division of Ser. No. 905,795, May 15, 1978, Pat. No. 4,290,434. This application Feb. 18, 1981, Ser. No. 235,569

Int. Cl.³ A61B 5/02

U.S. Cl. 128—680 9 Claims



1. A blood pressure measuring device for identifying the pressure of a subject's blood at systolic and diastolic conditions which comprises:

aneroid manometer means for indicating blood pressure measurements;

a compression cuff having an inflatable bladder therein;

a first length of flexible tubing flow coupled to said inflatable bladder;

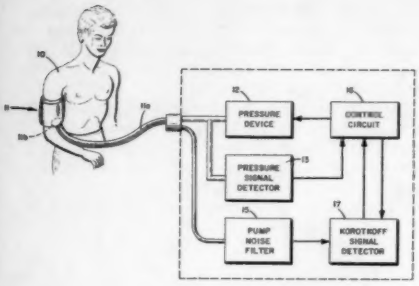
a second length of flexible tubing flow coupled to said aneroid manometer means; and

a quick disconnect bleed valve disposed coaxially with and between said first length of flexible tubing and said second length of flexible tubing and being arranged with tube connection means at each end.

4,417,587
BLOOD PRESSURE MEASURING APPARATUS

Tsutomu Ichinomiya; Toshio Kusunoki, and Tomohiro Kami, all of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Aug. 20, 1981, Ser. No. 294,620
Claims priority, application Japan, Aug. 25, 1980, 55-116777
Int. Cl.³ A61D 5/02
U.S. Cl. 128—682 14 Claims



1. An automatic blood pressure measuring apparatus comprising:

a pressurizable cuff for restricting the flow of blood through an artery;

a microphone adapted to be attached to said cuff for detecting sound emanating from said artery;

a pump means connected to said cuff to cyclically pressurize and depressurize said cuff in response to an electrical signal;

a circuit connected to receive a signal from said microphone comprising:

a first filter for passing low frequency signals in the sounds detected by said microphone;

a second filter for passing high frequency signals in the sounds detected by said microphone;

means for combining output signals from said filters to provide a first detection signal;

relay means having a normally closed contact and a normally open contact selectively connected to a movable contact in response to a control signal, said normally closed contact receiving a signal from said means for combining indicating that high or low frequency signals have been received;

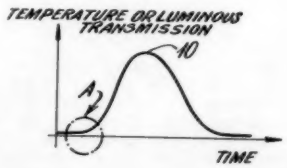
means for recording the pressure of said cuff in response to an enabling signal;

a control circuit connected to said pump means including a signal analyzing means connected to said movable contact, said signal analyzing means comparing the pressure of said cuff at a time each of successive signals are received from said means for combining, said control circuit providing a signal to said pump means for cyclically pressurizing said cuff between an initial maximum pressure and a minimum pressure, said cuff pressure decreasing from said maximum pressure until said means for combining produces an output signal whereby said cuff is re-pressurized to a pressure level intermediate said maximum pressure and a pressure which produced said means for combining output signal, said pressure thence decreasing to said minimum level so that additional signals are produced, said control circuit switching and movable arm into contact with said open contact when two successive pressures occurring at the time successive signals are produced by said means for combining are determined to be less than a predetermined amount and simultaneously supplying an enabling signal to said means for recording whereby a systolic blood pressure is recorded; said control circuit further including means for storing the pressure of said cuff when said second filter supplies a first signal after said movable arm is connected to said open contact, said control means thereafter repressurizing said cuff to a pressure intermediate said diastolic blood pressure and said maximum blood pressure, thence decreasing said cuff pressure until a second signal is received from said second filter, said control circuit comparing the pressure of said cuff at the time said second signal is received, said control circuit providing an enabling signal to said means for recording when said stored cuff pressure is substantially equivalent to the pressure of said cuff at the time said second signal is received.

4,417,588
APPARATUS AND METHOD FOR INITIATING CARDIAC OUTPUT COMPUTATIONS

Richard B. Houghton, Irvine, Calif., and David J. Lentz, Salt Lake City, Utah, assignors to Critikon, Inc., Tampa, Fla.

Filed Mar. 22, 1982, Ser. No. 360,942
Int. Cl.³ A61B 5/02
U.S. Cl. 128—713 9 Claims



1. In an apparatus for measuring cardiac output flow rate by introducing a predetermined amount of an indicator at a known temperature into the blood stream of a subject and monitoring the temperature of the blood at a location downstream from the point of introduction, including blood temperature sampling means for generating time dependent signals representative of the varying blood temperature at said location as said indicator travels through the bloodstream relative to said location, said signals defining a thermodilution curve, computing means for estimating the area bounded by said thermodilution curve and a baseline temperature subsequent to a first point in time, the improvement comprising:

(a) comparing means for comparing successive signals;

(b) means responsive to said comparing means for designating as said baseline temperature the temperature that corresponds to the first signal that is followed by a predetermined plurality of signals each representing a successively decreasing blood temperature, said first signal representing blood temperature at said first time; and

(c) means for initiating said computing means in response to designating said baseline temperature.

4,417,589
RESPIRATION MONITOR FOR MAMMALS

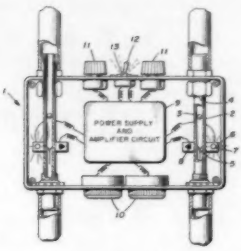
William E. Favaloro, 2029 Fern St., New Orleans, La. 70118

Filed Jun. 18, 1981, Ser. No. 275,038
Int. Cl.³ A61B 5/08
U.S. Cl. 128—716 10 Claims

1. A system for assisting and monitoring the breathing of mammals comprising in combination:

(1) a breathing machine having means for supplying a breathing gas and means for exhausting an oxygen-depleted breathing gas, said supplying and exhausting means each comprising at least one gas conduit for an intermittent essentially unidirectional main stream conduit gas flow; having in conjunction with at least one of the gas conduits a gas flow monitor comprising a tapered in line generally vertically disposed double ended through-flow gas flow indicator tube

having an entry end and an exit end and having a taper between the entry end and the exit end from a lower smaller diameter to an upper larger diameter, connected on both ends with the gas conduit and containing a gas flow-indicator ball having a diameter generally less than the diameter of at least a portion of the length of the tube disposed to rest directly against and rise with the main stream conduit gas



flow, means for stopping the ball at a given bottom position when there is no gas flow, light emission and detection means at said bottom no-flow position whereby a light is directed through the tube and its rays are detected when not obstructed by the ball, and monitor signal means responsive to the light detection means whereby a signal is provided when the ball is moved from the bottom no-flow position, and an alarm responsive to said signal.

4,417,590

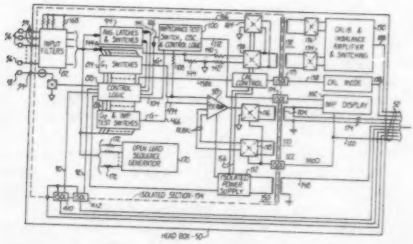
ELECTROENCEPHALOGRAPH

Leland B. Smith, Englewood, Colo., and Robert A. McIntyre, Skokie, Ill., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Continuation of Ser. No. 914,272, Jun. 9, 1978, abandoned. This application Nov. 6, 1980, Ser. No. 204,396

Int. Cl.³ A61N 5/04

U.S. Cl. 128—731 **30 Claims**



1. In an EEG system, a plurality of patient electrodes, a portable head box adapted to be placed near the patient to be tested, a multi-channel recording apparatus located remotely from said head box, a multi-conductor transmission link connecting said head box and said recording apparatus; said head box having (i) a plurality of input terminals individually corresponding to said plurality of patient electrodes, (ii) an output terminal coupled to said link and having (iii) a ground point that is electrically isolated from said link and from said recording apparatus; control means in said head box for selectively connecting predetermined ones of said input terminals to said output terminal during each of successive time periods which recur in repetitive time position frames and thereby applying a multiplexed signal to said link, means in said recording apparatus for demultiplexing said multiplexed signal, and a plurality of low-pass input filters individually connected between said patient electrodes, said input terminals and said ground point.

4,417,591

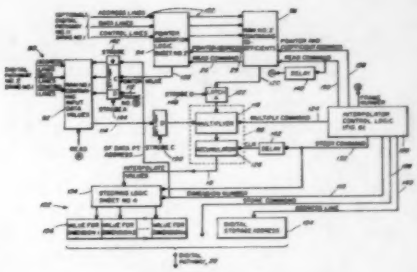
APPARATUS AND METHOD FOR TOPOGRAPHIC DISPLAY OF MULTICHANNEL EEG DATA

Norman D. Culver, Spotswood, N.J., assignor to Braintech, Inc., Spotswood, N.J.

Filed Dec. 31, 1980, Ser. No. 221,830

Int. Cl.³ A61F 0/4

U.S. Cl. 128—731 **18 Claims**



1. A system for displaying input data derived from the electrical activity of the brain comprising a source of multichannel input data signals derived from a plurality of brain electrical activity sensors and a video display for providing a topographic display at a display rate of at least one frame per second, the number of display elements within each frame being at least an order of magnitude greater than the number of sensors, the system further comprising:

an electronic interpolator for receiving the multichannel input data signals from the source of multichannel input data signals at a rate at least as great as the display rate and operating on the data signals to generate expanded display data signals, the expanded display data signals being a weighted combination of input data signals from selected electrodes for each element of the display, the interpolator including means for generating a fresh set of display data signals after receiving a fresh set of input data signals at a rate at least as great as the display rate; and

display circuitry for providing a topographic display of the expanded display data signals.

4,417,592

DIGITAL ELECTROENCEPHALOGRAPHIC INSTRUMENT AND METHOD

E. Roy John, 930 Greacen La., Mamaroneck, N.Y. 10546

Filed May 11, 1981, Ser. No. 262,395

Int. Cl.³ A61B 5/04

U.S. Cl. 128—731 **12 Claims**

1. An electroencephalographic system for the on-line conditioning of signals representing brain waves and representing muscle artifact, comprising a plurality of electrodes adapted to be removably attached to the head of a patient, a plurality of amplifiers each connected to a different pair of said electrodes, a matrix multi-channel display and recorder which in response to digital signals displays a copy of a plurality of the brain wave signals simultaneously in the form of a plurality of visible wavy lines on a recording surface, each wavy line being a series of dots which is the record of a different pair of said electrodes;

a digital signal conditioning means connected between said amplifiers and said multi-line channel dispay and recorder to reduce the adverse effects of said muscle artifact signals, said digital signal conditioning means including:

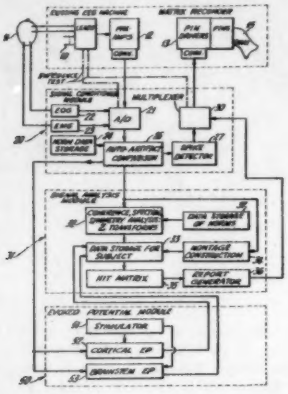
A/D means to convert the analog signals from each of said

amplifiers into digital signals representing samples of the patient's brain waves;

digital data storage means for the containing of brain wave norms;

digital comparison means to compare said brain waves with brain wave norms in said data storage means;

said comparison means including means to compare the samples of the patient's brain waves with a norm for the amplitude of the sample stored in said storage means, means to detect said samples representing brain waves at a selected level above said norm, means to detect said samples representing brain waves at a selected level below said norm and means to analyze said samples for spikes and sharp waves;



connection means to connect said A/D means, digital data storage means and comparison means to provide said signal conditioning;

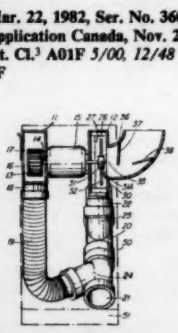
multiplexer means connected to said digital signal conditioning means and said recorder to distribute digital data from said digital signal conditioning means to the various channels of the recorder so that artifact-free brain waves and the said spikes and sharp waves are recorded by said recorder.

4,417,593

HAND PORTABLE GRAIN THRESHING APPARATUS

Garth A. Brehon, 7-1216 Morgan Ave., Saskatoon, Saskatchewn, Canada S7H 2R7

Filed Mar. 22, 1982, Ser. No. 360,188
Claims priority, application Canada, Nov. 25, 1981, 390885
Int. Cl.³ A01F *5/00, 12/48*
U.S. Cl. 130—27 HF **14 Claims**



1. A portable hand carryable grain threshing device for use in obtaining samples of grain for test purposes, said device comprising:

(a) a housing having a chamber therein;

(b) a foraminous wall within said chamber and spaced from selected walls thereof separating said chamber into respective first and second areas;

(c) a driven beater within said first area and an inlet for feeding heads of grain to the beater in such area;

(d) an outlet from said second area;

(e) an air flow passage means having first and second outlets spaced apart from one another axially therealong, one of said outlets being at a higher elevation than the other during use of the device;

(f) passage means connecting the outlet from said second area to said air flow passage means at a position between the outlets therefrom; and

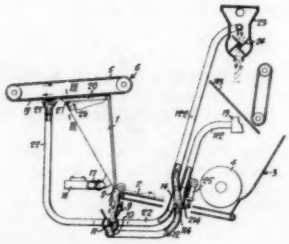
(g) means to cause air flow through said air flow passage means in a direction from said lower one of said pair of outlets to the other of such outlets past said connecting passage means.

4,417,594

APPARATUS FORMING A CONTINUOUS CUT TOBACCO BRAID IN A CIGARETTE MAKING MACHINE

Franco Garrone, Bologna, Italy, assignor to Sasib S.p.A., Bologna, Italy

Filed Nov. 18, 1981, Ser. No. 322,725
Claims priority, application Japan, Nov. 21, 1980, 12731 A/80
Int. Cl.³ A24C *5/14, 5/39*
U.S. Cl. 131—110 **3 Claims**



1. Apparatus for forming a continous cut tobacco braid in a cigarette making machine, comprising:

a transfer duct (1) for transferring by means of a suitable air stream the cut tobacco from the delivery end of a cut tobacco feeder (2, 3) to an endless braid-forming suction tape (5);

a first pneumatic collecting duct (12, 112) which receives the greater and heavier tobacco particles, such as tobacco ribs, from the said delivery end of the said tobacco feeder, and conveys them into a collecting box (13);

a second pneumatic collecting duct (22, 12₄) which receives the excess tobacco trimmed from the tobacco braid being formed on the underside of the said braid-forming suction tape (5) by suitable trimmers (21) arranged along the path of the said suction tape (5) dowstream of the said transfer duct (1), for conveying said trimmed excess tobacco into the feeding hopper (103) of said cut tobacco feeder (2, 3);

a deflector valve (14) arranged between the said first pneumatic duct (12, 112) for the tobacco ribs and the said second pneumatic duct (22, 122) for the trimmed excess tobacco, said deflector valve (14) being switchable from a first position in which the tobacco ribs are conveyed through the first pneumatic duct from the delivery end of the tobacco feeder into the collecting box, and the trimmed excess tobacco is conveyed through the second pneumatic duct from the trimmers to the feeding hopper of the cut tobacco feeder, to a second position in which the cut tobacco delivered by the delivery end of the cut

tobacco feeder, including the tobacco ribs, is returned into the feeding hopper (103) of the cut tobacco feeder, while the suction is stopped in the duct (22) receiving the trimmed excess tobacco, and the suction is also stopped in the duct (112) leading to the tobacco ribs collecting box (13);

sensor means (27, 28) arranged at the interior of the tobacco transfer duct (1) said sensor means being sensitive to the formation of tobacco obstructions or concentrations at the interior of the said transfer duct (1), said sensor means being operatively associated with a control circuit for actuating control means for switching the said deflector valve (14) and for interrupting the air stream at the interior of the transfer duct (1).

4,417,595

HAIRBRUSH

Takeo Okumura, Sakura, and Miho Imai, Ichikawa, both of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed May 11, 1981, Ser. No. 262,356
Claims priority, application Japan, May 16, 1980, 55-67300[U]; Apr. 14, 1981, 56-53573[U]
Int. Cl.³ A45D *44/18*
U.S. Cl. 132—85 9 Claims

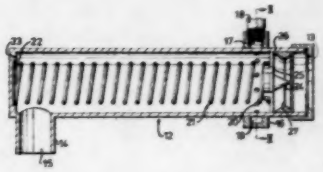
1. A hairbrush comprising an elongated, substantially straight, hairbrush body having a longitudinally extending handle and an elongated bristle-implanted portion extending longitudinally from one longitudinal end of said handle, said bristle-implanted portion comprising an elongated central core having an arcuate peripheral surface portion and a relatively thin sheet wrapped around and secured to said arcuate peripheral surface portion of said core and conforming to the curvature thereof, said handle and said bristle-implanted portion being longitudinally aligned with each other, said hairbrush body having a longitudinal central axis which extends through the central portions of said handle and said core, the outer surface of said sheet being spaced a uniform distance from the longitudinal central axis of said hairbrush body, a multitude of bristles affixed to said sheet and projecting from the outer surface thereof in a radially outward direction with respect to the longitudinal central axis of said hairbrush body, each of said bristles consisting of a single strand of bristle material, said single strands of bristle material being independent and discrete from one another and being spaced-apart from each other longitudinally and laterally on said outer surface of said sheet, all of said single strands of bristle material lying within and being distributed throughout a single continuous region wherein imaginary radial lines drawn from the longitudinal central axis of said hairbrush body through the respective opposite longitudinal edges of said region define a reflex angle of from 210° to 270°, the remainder of said bristle-implanted portion being free of bristles.

4,417,596

PORTABLE APPARATUS FOR CLEANING RE-USABLE FILTERS

Bo Pahlen, Älvhagsvägen 11, S-194 53 Upplands Väsby, Sweden

Filed Sep. 10, 1981, Ser. No. 300,930
Claims priority, application Sweden, Sep. 15, 1980, 8006448
Int. Cl.³ B08B *9/00*
U.S. Cl. 134—152 4 Claims



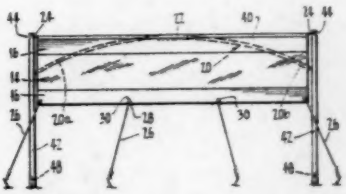
1. An apparatus for cleaning a re-usable filter, particularly a filter of tubular configuration and exhibiting pleated or bellows-like filter surfaces, said apparatus comprising a hollow body within which the filter is intended to be cleaned and the interior of which is arranged to receive a cleaning fluid, such as water, from an external source, and which body is provided with means for discharging used cleaning fluid during a filter cleaning operation, characterized in that the hollow body is provided with at least one transversally and peripherally extending flange having a circular cross section, so arranged as to form a space between the inner wall of the flange and the outer wall of said body, and that the flange is provided with a through-passing opening which forms an inlet for cleaning liquid and that the hollow body is provided around its periphery with a plurality of openings through which said space communicates with the interior of the hollow body so that a tubular filter cartridge can be cleaned by the action of said flowing cleaning fluid, by moving said cartridge manually axially with in the hollow body by means of a detachable handle.

4,417,597

AWNING STRUCTURE

Rodney L. Montgomery, P.O. Box 37194, Winnellie, N.T., Australia

Filed Aug. 19, 1980, Ser. No. 179,468
Int. Cl.³ E04F *10/04*
U.S. Cl. 135—102 8 Claims



1. A method of erecting an awning comprising the steps of connecting a resilient beam at its mid-section to a mid-section of said awning;

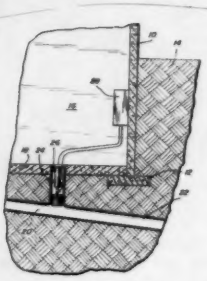
connecting the ends of said resilient beam to an intermediate portion of a pair of substantially straight and substantially rigid uprights;

connecting the awning to the tops of said uprights; and forming the beam into a bow configuration by drawing the bottoms of the uprights toward one another as the uprights are brought into an upright position which at the same time stretches the awning outwardly to place the awning under tension.

4,417,598
PNEUMATIC VALVE

Mario DePirro, 330 E. Roosevelt, Lombard, Ill. 60148

Filed Feb. 2, 1983, Ser. No. 463,070
Int. Cl.³ F17D 3/00; G05D 9/12
U.S. Cl. 137—2 15 Claims



11. A method for sealing off the flow of liquid at the intersection of two pipes, one of the pipes positioned at least partially vertical to the other pipe and an expandable bladder means disposed therein the method comprising;

(a) sensing the presence or absence of liquid at an established height in the vertical pipe;

(b) generating a control signal in response to the sensing means detecting the presence of liquid at the estabilsed height;

(c) repositioning the expandable bladder means in the other pipe in response to the control signal generated detecting the presence of liquid;

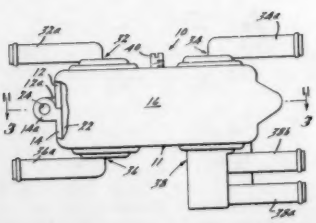
(d) inflating the expandable bladder means after it is repositioned in the other pipe in response to the sensing means detecting the presence of the liquid at the established height and

(e) sealing off the flow of liquid at the interesection of the two pipes.

4,417,599
VACUUM SIGNAL INTEGRATOR

Andrew A. Kenny, Roselle, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 3, 1981, Ser. No. 289,545
Int. Cl.³ G05D 16/00
U.S. Cl. 137—85 13 Claims



1. A device for integrating a plurality of fluid pressure input signals comprising:

(a) housing means defining a plurality of spaced fluid pressure ports each adapted to receive a fluid pressure input signal;

(b) a plurality of pressure responsive means each disposed to receive fluid pressure from one of said ports, and to provide a mechanical force output in response to said pressure signal;

(c) idler means mounted for pivotal movement with respect to said housing means and operative to receive said mechanical forces and to provide in response thereto a single resultant output force;

(d) modulator valve means operative, upon connection to a source of fluid pressure, to provide a modulated output pressure signal in response to force biasing by said single resultant force;

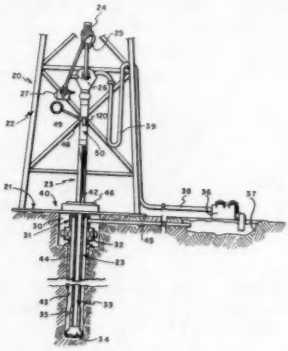
(e) said housing means comprises an upper and lower shell joined for opening and closing on a parting line, wherein said modulator valve means is mounted on one of said upper and lower shell and certain of said pressure responsive means are mounted on the other of said upper and lower shell; and,

(f) means for latching said upper and lower shell closed on said parting line.

4,417,600
SAFETY VALVE

Gary A. Kohn, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 131,793, Mar. 19, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 332,927
Int. Cl.³ F16K 37/00, 31/44
U.S. Cl. 137—553 27 Claims



1. A valve comprising:

a. housing means;

b. a longitudinal flow passage extending through the housing means;

c. valve closure means, disposed within the housing means, having a first position allowing fluid flow through the longitudinal flow passage and a second position blocking fluid flow through the longitudinal flow passage;

d. an operating sleeve means slidably disposed within the longitudinal flow passage and engaging the valve closure means to shift the valve closure means between its first and second positions;

e. a first longitudinal slot formed in the housing means and communicating between the interior and the exterior of the housing means;

f. a first pin means projecting through the first slot and engaging the operating sleeve means;

g. the first pin means being slidable within the first slot and a portion of the pin means extending exterior from the first slot; and

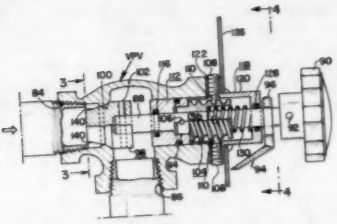
h. means for engaging the first pin means with a shifting tool to move the first pin means and operating sleeve means longitudinally with respect to the housing means.

4,417,601

VARIABLE PROPORTIONING VALVE FOR BALANCED PRESSURE PROPORTIONING SYSTEMS, AND SYSTEM CONTAINING THE VALVE

Robert W. Bennett, Downingtown, Pa., assignor to National Foam Systems, Inc., Lionville, Pa.

Filed Dec. 19, 1980, Ser. No. 218,066
Int. Cl.³ F16K 1/04, 1/12
U.S. Cl. 137—556.6 5 Claims



1. A liquid proportioning valve comprising a hollow open upper end valve body, a removable cap and securement means on said open upper end, said cap having an opening therethrough, a rotatable stem extending through said opening and operably reciprocably mounted in said valve body, said valve body having spaced inlet and outlet openings, a valve plug body attached to the lower end of said stem, a valve seat in said valve body coactable with said valve plug body, grooved barrel cam means on said stem, adjustable pins extending through the valve cap at radially spaced positions therearound, said pins having wedge-shaped inner ends tightly operatively engaged in the groove of said cam means to positively control movement thereof upon rotation of the valve stem, said radial spaced pins serving to positively position said cam means in said valve body and operble upon stem rotation for movement of said cam means and said valve plug body to effect spaced relationship of said valve plug body and said valve seat for opening and closing said valve by withdrawal of said valve plug body from valve seat contact to thereby control flow of liquid through said valve, said cam means being operable for quickly effecting a complete valve opening, a compression spring in said valve body surrounding said stem and engaged between said cam drive means and the underside of said cap, said spring normally maintaining positions of the stem, and therethrough the valve plug body, within the valve body, and adjustable damper plugs inserted through said cap into adjustable frictional engagement with the circumferential outer surface of said cam, said stem cam means and said valve plug body being conjointly removable from within said valve body subsequent to removal of said cap from said valve body.

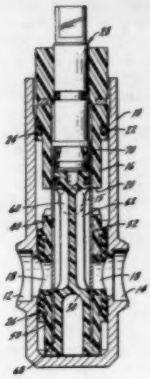
4,417,602

ZERO INTERNAL PRESSURE CARTRIDGE

Alfred M. Moen, Grafton, Ohio, assignor to Stanadyne, Inc., Windsor, Conn.

Filed Nov. 6, 1981, Ser. No. 318,743
Int. Cl.³ F16K 11/02
U.S. Cl. 137—625.17 4 Claims

1. A mixing valve including a sleeve having hot and cold water inlets and an outlet, a stem movable within said sleeve for controlling the volume and temperature of water discharged from said sleeve outlet, a pressure member positioned within said sleeve and coaxial with said stem, said stem including a cylindrical piston extending coaxially about said pressure member and having inlet and outlet means therein, valve closing seal means at said sleeve inlets, which seal means have portions extending into sealing engagement with said movable piston, said pressure member being fixed relative to said sleeve and being within the path of flow from said sleeve inlets to said sleeve outlet and downstream of said valve closing seal means, said pressure member having an interior partition defining one flow path from said hot water inlet and a second flow path from said cold water inlet, a seal positioned between said stem and pressure member preventing the application of inlet pressure upon said stem, a second seal carried by said stem and in sealing engagement with the interior of said sleeve, said seals having equal external diameters, balancing pressure upon said stem.

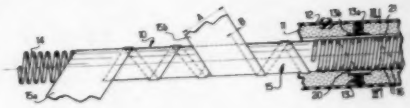


4,417,603

FLEXIBLE HEAT-INSULATED PIPE-LINE FOR IN PARTICULAR CRYOGENIC FLUIDS

Gilles Argy, La Queue Les Yvelines, France, assignor to Technigaz, France

Filed Feb. 2, 1981, Ser. No. 230,892
Claims priority, application France, Feb. 6, 1980, 80 02614
Int. Cl.³ F16L 11/00
U.S. Cl. 138—149 34 Claims



1. A flexible fluid-conveying pipe, of the kind comprising: an inner tubular duct, a layer of heat-insulating material surrounding in closely engaging relationship said inner tubular duct, and an outer protective casing surrounding in closely engaging relationship said heat-insulating layer, said protective casing consisting of a tough flexible fluid-tight tubular conduit connected to said inner tubular duct by retaining distance-pieces made in particular of relatively rigid cellular material and longitudinally spaced from each other and distributed at discrete locations while bearing against said inner tubular duct; said inner tubular duct consisting of at least three layers radially overlying in closely engaging relationship and including one single inner layer consisting of a metal wire helically wound with mutually spaced turns; and intermediate layer of yielding composite material surrounding said inner layer; and a single outer layer consisting of a metal wire helically wound about said intermediate layer but having its turns longitudinally offset by one half winding pitch with respect to those, respectively, of said inner wire layer so as to be located between the turns, respectively, of the latter, said single outer layer being substantially identical in particular in at least its own diameter and winding diameter and its winding pitch with said inner wire layer; wherein the improvement consists in that a blanket of relatively soft material is interposed between each

aforesaid distance-piece and said inner tubular duct while being slightly compressed therebetween.

18. A flexible fluid-conveying pipe, of the type comprising: an inner tubular duct, a layer of heat-insulating material surrounding in closely engaging relationship said inner tubular duct and an outer protective casing surrounding in closely engaging relationship said heat-insulating layer, said inner tubular duct consisting of at least three layers radially overlying in closely engaging relationship and including one single inner layer consisting of a metal wire helically wound with mutually spaced turns; an intermediate layer of yielding composite material surrounding said inner layer; and a single outer layer consisting of a metal wire helically wound about said intermediate layer but having its turns longitudinally offset by one half winding pitch with respect to those, respectively, of said inner wire layer so as to be located between the turns, respectively, of the latter, said single outer layer being substantially identical in particular in at least its own diameter and winding diameter and its winding pitch with said inner wire layer, wherein the improvement consists in that both opposite respectively inner and outer end sides of said intermediate layer which are engaging said metal wire are each one faced with a flexible liner promoting slipping between said metal wire while providing for the cohesion and protection of said sides, said liner being in particular made from a polyurethane elastomer with a thickness in particular of about 0.3 mm.

4,417,604

METHOD AND DOBBY FOR SYNCHRONIZING ALL HEDDLE FRAMES OF A WEAVING MACHINE

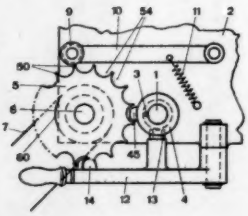
Walter Kleiner, Hirzel-Zurich, Switzerland, assignor to Staeubli Ltd., Horgen-Zurich, Switzerland

Filed Aug. 11, 1981, Ser. No. 292,107

Claims priority, application Switzerland, Aug. 18, 1980, 6202/80

Int. Cl.³ D03C *15/04, 1/00*

U.S. Cl. 139—329 **18 Claims**



1. A method for synchronizing all heddle frames of a weaving machine controlled by a dobby having a rotatably supported drive cylinder, a drive mechanism operatively coupled to said drive cylinder and adapted to successively index it to a plurality of predetermined angular positions, a pattern card operatively driven by said drive cylinder and having a plurality of rows of control points, said pattern card having perforations at a plurality of said control points, and a plurality of reading needles which are each supported for movement by said drive mechanism between a retracted position spaced from said pattern card and a reading position sensing a respective said control point of a said row of control points thereon, a respective said row of control points being aligned with said reading needles in each said predetermined angular position, movement of each said heddle frame being controlled by a respective said reading needle, comprising the steps of uncoupling said drive mechanism from said drive cylinder when said drive cylinder is between two said predetermined positions; activating a locking mechanism which prevents rotation of said drive cylinder; thereafter operating said drive mechanism so that said reading needles move to said reading position, each said reading needle engaging said pattern card at a location which is between two said rows of control points and is thus free of perforations, which causes all said heddle frames to be moved to a common position; returning said reading needles to said retracted position; and thereafter deactivating said locking mechanism and recoupling said drive mechanism to said drive cylinder.

9. In a dobby for synchronizing all heddle frames of a weaving machine, including a pattern card supported for movement in a first direction, having a plurality of rows of control points extending in a second direction transverse to said first direction, and having perforations at a plurality of said control points; a plurality of reading needles which are each supported for movement between a retracted position spaced from said pattern card and a reading position sensing a respective said control point of a said row of control points thereon; and first means for successively indexing said pattern card to a plurality of predetermined positions, each of said reading needles being aligned with a respective said control point of a respective one of said rows of control points in each said predetermined position, said reading needles moving into and out of said reading position when said pattern card is positioned at each of said predetermined positions, said heddle frames being operatively coupled to respective said reading needles and moving in responsive thereto, the improvement comprising second means for selectively moving said pattern card relative to said reading needles to a further position in which each said reading needle is aligned with a respective location on said pattern card which is spaced from said control points and is free of perforations, said reading needles moving into and out of said reading position when said pattern card is in said further position and causing all said heddle frames to move to a common position.

4,417,605

FABRIC WEAVING METHOD

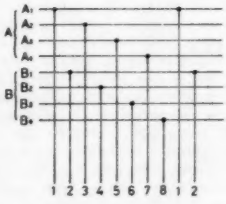
Shoji Miyashita, No. 3809, Koasumi, Fujiyoshida, Yamanashi Pref., Japan

Filed Sep. 11, 1981, Ser. No. 301,894

Claims priority, application Japan, Sep. 25, 1980, 55-133527

Int. Cl.³ D03D *23/00*; D03C *13/00*

U.S. Cl. 139—383 R **4 Claims**



1. In a process for weaving fabrics whereby warp yarns in different yarn groups are alternately raised and lowered to permit passage of weft yarns by causing corresponding heddle frames in different frame groups, to which heddles are operatively linked, alternately to be raised and lowered, the process comprising the steps of:

(1) connecting each individual succeeding warp yarn in one yarn group alternately to a corresponding heddle frame in the different frame groups according to a predefined pattern of connections of the warp yarns to the heddles;

(2) connecting each individual succeeding warp yarn in the remaining succeeding groups according to the same pattern as in step (1); and

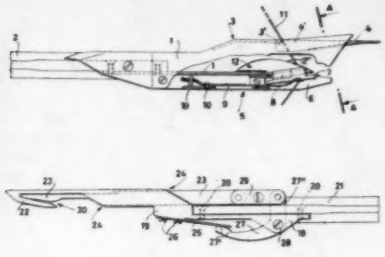
(3) causing one frame in one frame group to be raised or lowered and then one frame in another frame group to be raised or lowered, the raising or lowering being repeated for the frames in the different frame groups according to the predefined pattern of connections of the warp yarns to the respective heddles.

4,417,606

WEFT PROPELLING GRIPPERS FOR TEXTILE LOOMS

Luciano Corain, Vicenza, Italy, assignor to Nuovo Pignone S.p.A., Florence, Italy

Filed Aug. 25, 1981, Ser. No. 296,211
Claims priority, application Italy, Sep. 15, 1980, 24661 A/80
Int. Cl.³ D03D 47/20
U.S. Cl. 139—448 5 Claims



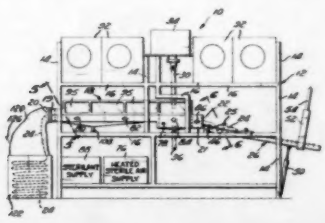
1. Weft inserting and withdrawing grippers for a shuttleless loom, each comprising a gripper body provided with weft yarn gripping and clamping members, characterised in that said weft yarn gripping and clamping members of the weft inserting gripper are constituted by a vertical blade-type foot which is hinged upperly to a rotation pivot supported by the inserting gripper body and disposed parallel to an underlying horizontal gripping surface, and cooperates with said gripping surface present longitudinally on the outer side of the inserting gripper, said blade-type foot having a height greater than the distance of said rotation pivot from said gripping surface, and such as to cause it to form with the gripping surface an angle approximately equal to the complementary of the angle of friction between the yarn and gripping surface, and being kept resting against said gripping surface and inclined outwards from the outer side of the inserting gripper by means of a thrust spring which is supported by the inserting gripper body and presses against its inclined face, and an arcuate deflector for the weft yarn, which descends inside the inserting gripper body until it reaches the level of said horizontal gripping surface.

4,417,607

APPARATUS AND METHOD FOR ASEPTICALLY FILLING FLEXIBLE CONTAINERS

William R. Scholle, Corona Del Mar; William J. Scholle, Irvine, and Michael J. Gunning, Cerritos, all of Calif., assignors to Scholle Corporation, Irvine, Calif.

PCT No. PCT/US81/00614, § 371 Date Jun. 29, 1981, § 102(e) Date Jun. 29, 1981, PCT Pub. No. WO82/03832, PCT Pub. Date Nov. 11, 1982
PCT Filed May 7, 1981, Ser. No. 278,344
Int. Cl.³ B65B 3/04; B67C 1/16, 3/34
U.S. Cl. 141—1 39 Claims



1. In a container filling apparatus comprising (a) feed means for serially advancing containers connected in a continuous web, from an entry port to a dispensing port, and (b) an aseptic filling compartment between said ports having a filling means for filling said containers, a method for introducing said containers into said apparatus and dispensing them from said apparatus without introducing contaminants into said aseptic filling compartment, said method comprising:

applying a positive pressure to said aseptic filling compartment, to maintain an aseptic environment in said compartment, by introducing a sterile gas therein;

providing said web of containers prepackaged in a sealed overwrap container and presterilized in said overwrap container;

applying a positive pressure within said overwrap container by introducing sterile gas therein;

forming an opening in said overwrap container to permit connection of said overwrap container to said entry port;

operably connecting one end of said continuous web of containers to said feed means to permit said feed means to advance said continuous web of containers through said apparatus from said entry port to said dispensing port;

sealing said opening in said overwrap container to said entry port;

spraying said containers with an antiseptic liquid, as they are advanced from said entry port to said filling means by said feed means;

heating said containers, prior to reaching said filling means;

advancing said containers to said aseptic filling means, by said feed means, after said containers are heated, to permit said containers to be filled by said filling means; and

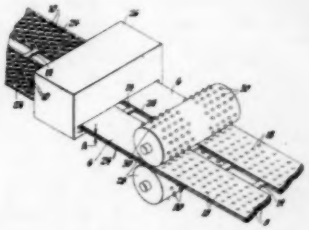
dispensing said containers, after they are filled, through said dispensing port.

4,417,608

METHOD OF MAKING A LEAD-ACID STORAGE BATTERY PLATE

Charles P. McCartney, Jr., Yorktown, and Ellis G. Wheadon, Anderson, both of Ind., assignors to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 250,412, Apr. 2, 1981, Pat. No. 4,351,891. This application Jun. 23, 1982, Ser. No. 391,087
Int. Cl.³ B65B 3/04; H01M 4/30
U.S. Cl. 141—1.1 1 Claim



1. A process for making Pb-acid storgage battery plates comprising the steps of:

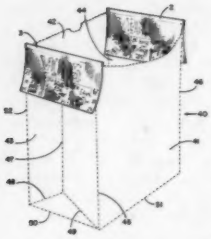
embedding a conductive grid in a leady active material paste such as to provide a plate having opposing faces and a predetermined thickness of paste between said faces, said grid comprising a network of criss-crossing interconnected grid wires defining a plurality of interstitial openings between said grid wires, said paste residing primarily in said openings; and

depressing the paste in substantially the centers of said openings such as to cause said paste to exude substantially radially from said centers to zones of said plate more proximate said grid wires surrounding said openings and to provide a plurality of dimples in at least one of said faces at the centers of said openings, said paste thereafter having a thickness at the bottom of said dimples which is

less than said predetermined thickness and a thickness at said zones which is greater than said predetermined thickness.

4,417,609
COMBINATION COUPON CARRIER AND BAG STIFFENER

Tom W. Sherwood, 1698 Raindance Way, Las Vegas, Nev. 89109
Continuation-in-part of Ser. No. 255,540, Apr. 20, 1981, Pat. No. 4,379,519. This application Nov. 2, 1981, Ser. No. 317,323
Int. Cl.³ B65B *1/04*
U.S. Cl. 141—98 **8 Claims**

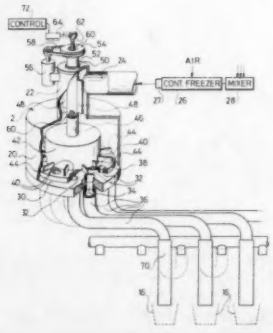


1. In combination, a bag stiffener/coupon carrier device comprising at least one flat strengthening member having a lower edge, means to attach the strengthing member to a side panel of a paper bag, and at least one coupon member removably attached to the lower edge of the strengthening member, and

a bag adapted to be maintained in an open position or a folded position, the bag having front, rear, and opposing side bag panels defining a rectangular horizontal cross-section when the bag is in the open position, upper edges of said bag panels defining a bag mouth, the opposing side bag panels having intermediate vertical creases therein.

4,417,610
DISPENSER SYSTEMS

Ejvind Waldström, Hundslund, and Gerhard Kaufmann, Viby J., both of Denmark, assignors to O.G. Hoyer A/S, Hojbjerg, Denmark
Filed Mar. 31, 1981, Ser. No. 249,413
Int. Cl.³ B65B *3/10*
U.S. Cl. 141—91 **15 Claims**



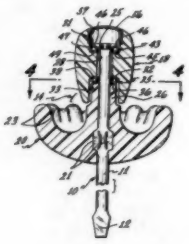
1. A system for dispensing a viscid medium from a supply medium flow to a plurality of receptacles, the system comprising a filling station and a distributor having an inlet for a pressurized supply medium flow and a plurality of outlets individually connected to a series of dispenser openings located in said filling station, support means for sequentially moving consecutive groups of receptacles through said filling station to align the single receptacles of each group with the respective dispenser openings, outlet valve means located in the path of the medium flow upstream of said dispenser openings, and valve control means operable to repeatingly open and close said valve means to allow concurrent medium outlet from the dispenser openings during an opening time interval corresponding to a predetermined medium volume being dispensed for the required filling of the receptacles of the respective consecutive groups;

pressure sensing means located upstream of said valve means for sensing the pressure of said pressurized medium, and

means operatively connected with said pressure sensing means and said valve control means for effectively adjusting the length of said opening time interval as a function of a variation of the average medium pressure between consecutive operation cycles of said valve means, whereby the consecutive receptacles are caused to receive substantially uniform volumes of medium irrespectively of general gradual changes of the pressure of the viscid medium.

4,417,611
SCREWDRIVER

Jung S. Kim, 7414 Deany Ave., Sun Valley, Calif. 91352
Filed Feb. 26, 1982, Ser. No. 352,776
Int. Cl.³ B25G *1/00*
U.S. Cl. 145—61 EA **2 Claims**



1. A screwdriver comprising:

a shank having a wedged-shaped lower end;

a handle for said shank including a head member and a wheel member;

said head member provided with an axial hole therethrough having a diameter larger than said shank and having enlarged central openings on the upper and lower end portions thereof;

said wheel member having a relative large diameter with upwardly extending spaced projections on the outer periphery thereof and having a hub portion on the upper end thereof;

said wheel member anchored on said shank so as to be positioned below the upper end portion thereof;

a lower ball bearing assembly seated within the central opening on the lower end portion of said head member;

an upper ball bearing assembly seated within the central opening on the upper end portion of said head member;

said head member positioned with its axial hole surrounding the upper end portion of said shank and with said lower ball bearing assembly rotatably journalling the lower end portion of said head member on the top surface of the hub portion of said wheel member and with said upper ball bearing assembly rotatably journalling and axially retaining the upper end portion of said head member on the upper end of said shank;

whereby an axial force can be applied by the palm of the hand of a user on the head member to hold the wedge-shaped lower end of the shank in a slot on a screwhead

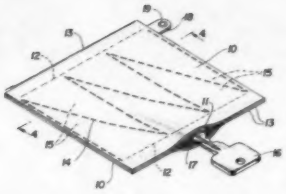
while the fingers of the hand can be used to grip the projections on the periphery of the wheel member to thereby rotate the shank to advance or retract said screw.

4,417,612

POCKET KEY HOLDER

Michael V. Couture, 228 Pine St., Holyoke, Mass. 01040, and Ronald Keklak, 637 Church St., Amston, Conn. 06231

Filed May 18, 1982, Ser. No. 379,366
Int. Cl.³ A45C *11/32*
U.S. Cl. 150—40 **9 Claims**



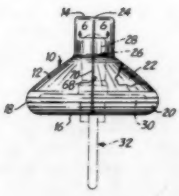
1. A pocket key holder comprising a pair of outer flexible sheets of like size having opposite parallel edges adapted to register when the outer sheets are in superposed relationship, an intermediate flexible sheet between said outer sheets in sandwiched relationship and having opposite parallel edges spaced inwardly from the corresponding edges of the outer sheets so that said outer flexible sheets will form closure flaps along opposite ends of the key holder, connecting means for all of said sheets following a zigzag path across the sheets and forming on the key holder multiple tapering and interfitting key pockets on each side of the intermediate sheet and between it and said outer sheets, said pockets having open ends facing said parallel edges of the outer sheets, the open ends of the key pockets on opposite sides of the intermediate sheet facing in opposite directions toward opposite ends of the key holder, and coacting flexible closure strips on the interior surfaces of the closure flaps between the parallel edges of the outer and intermediate sheets, said closure strips being of a type which form a secure continuous closure when pressed together and may be pulled apart to separate the closure flaps.

4,417,613

UNIVERSAL PACIFIER CASE

Kathryn A. Ryan, and Gregory F. Ryan, both of 77 Erie St., Dumont, N.J. 07628

Filed Mar. 29, 1982, Ser. No. 363,305
Int. Cl.³ B65D *85/00, 65/06*; A61J *17/00*
U.S. Cl. 150—52 R **14 Claims**



1. A pacifier case for providing a sanitary enclosure for a pacifier of the type having a nipple extending axially from one side of a radial guard flange and a handle extending from the other side of the guard flange, the pacifier case comprising:

a unitary shell-like housing of molded synthetic resin extending axially between a first end and a second end, said housing establishing an enclosed chamber having a first portion, adjacent the first end, for receiving and enclosing the nipple of the pacifier and a second portion, adjacent the second end, for receiving and enclosing the guard flange of the pacifier;

the housing including a pair of half-shell-like wall members having peripheral edges for engaging one another when in a closed position to establish said enclosed chamber;

hinge means joining the wall members along a limited length of the peripheral edges for enabling parting of the wall members at the peripheral edges for selective movement of the wall members to an open position to open the chamber;

the housing including radially-extending end wall portions adjacent the second end thereof; and

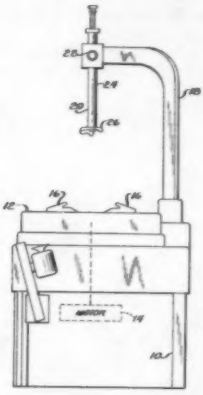
an aperture in the end wall portions for enabling the handle of the pacifier to project axially through the aperture and outside the chamber beyond the end wall portions, when the wall members are in the closed position.

4,417,614

ABRASION ELIMINATING TIRE CHANGING TOOL

Charles L. Cunningham, Nashville, and Robert E. Gwaltney, Brentwood, both of Tenn., assignors to Hennessy Industries, Inc., La Vergne, Tenn.

Filed May 29, 1981, Ser. No. 268,199
Int. Cl.³ B60C *25/08*
U.S. Cl. 157—1.24 **10 Claims**



1. In a tire changer including a base, a wheel receiving and holding table on the base, a tire changing tool including a head having a first surface for engagement with a tire to be mounted and/or demounted and a second surface facing a wheel when a wheel is mounted on a table, and means for effecting relative movement between the table and the tool, the improvement wherein said tool includes a magazine for receipt of a solid plastic-like abrasion eliminating material, an aperture in said second surface extending to said magazine so that abrasion eliminating material in said magazine may be conveyed to said second surface, and means for feeding abrasion eliminating material in said magazine to said aperture.

4,417,615

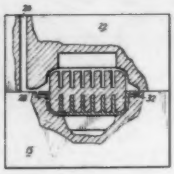
CAST IRON RECUPERATOR

Richard F. Stockman, Friendship, N.Y., assignor to Air Preheater Company, Inc., Wellsville, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,892
Int. Cl.³ B22D *19/04*
U.S. Cl. 164—94 **6 Claims**

1. The method of making an envelope for a recuperative type heat exchanger comprising the steps of casting a bottom

half of an envelope to form a concave wall that has a peripheral surface extending along a pair of opposite sides of said envelope, preparing a convex mold for a top half of said envelope that includes elongate slits on opposite sides thereof adapted to confront the internal surfaces on the top and bottom halves of the envelope, pouring a quantity of molten metal into



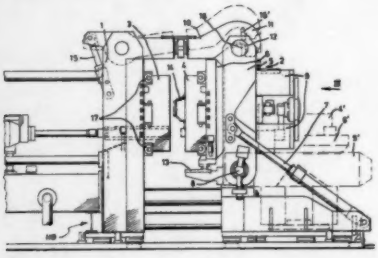
the mold to form the top half of the envelope that includes a portion that confronts the slits and is contiguous with the peripheral surface on the bottom half of the envelope, and cooling the casting to fuse the molten metal of the top half of the envelope to the peripheral surface of the bottom half of the envelope thereby forming a fluid-tight bond therebetween.

4,417,616

HORIZONTAL PRESSURE DIE-CASTING MACHINE

Horst Seitz, Pestalozzistrasse 21, 3500 Kassel, Fed. Rep. of Germany

Filed Aug. 13, 1981, Ser. No. 292,490
Int. Cl.³ B22D *33/04, 17/00*
U.S. Cl. 164—113 18 Claims



1. A horizontal pressure die-casting machine comprising:
a frame;
a first and second die part;
a substantially vertically extending stationary first fixing plate connected to said frame for supporting said first die part;
a movable fixing plate pivotally mounted to said frame for supporting said second die part;
second plate drive means connected to said second fixing plate for moving said second fixing plate from a substantially horizontal mounting position away from said first fixing plate, to a substantially vertical working position facing and spaced from said first fixing plate;
said second fixing plate comprising a base plate part pivotally mounted to said frame, a mounting plate part for supporting said second die part movably mounted on said base plate part, and mounting plate drive means connected to said base plate and mounting plate parts for displacing said mounting plate part with respect to said base plate part to move said second die part toward said first die part with said second fixing plate in its substantially vertical position.

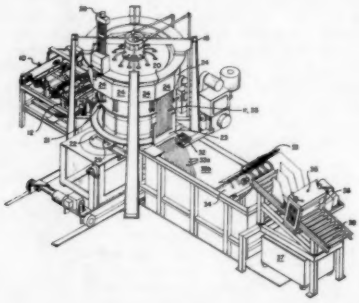
15. A method of operating a horizontal pressure die-casting machine which includes a frame, a vertical stationary first fixing plate connected to the frame for supporting a first die part, a movable second fixing plate pivotally mounted to the frame for supporting a second die part, and second plate drive means connected to the second fixing plate for moving the second fixing plate, with the movable second fixing plate itself including a base plate pivotally mounted to the frame and a mounting plate movably mounted to the base plate and movable by mounting plate drive means, the method comprising:
activating said first plate drive means for moving said first fixing plate from a substantially horizontal mounting position into a substantially vertical working position facing and spaced from said first fixing plate to align the first and second die parts; and
activating said mounting plate drive means to move the second die part toward and into engagement with the first die part.

4,417,617

APPARATUS FOR VACUUM CASTING OF RODS

Sankar P. Iyer, Kokomo, Ind.; Roy D. Lewis, Lachine, Canada; H. Joseph Klein, Kokomo; William C. Hord, Greentown, both of Ind., and James C. Ailor, Kokomo, Ind., assignors to Cabot Corporation, Kokomo, Ind.

Division of Ser. No. 874,849, Feb. 3, 1978. This application Mar. 9, 1979, Ser. No. 18,886
Int. Cl.³ B22D *27/16, 33/00*
U.S. Cl. 164—254 1 Claim



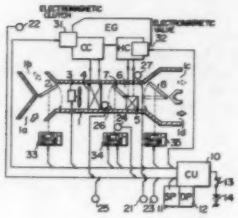
1. An apparatus for aspiration casting of metals and the like comprising a mandrel having a plurality of vertically movable side by side vacuum heads, mold engaging means on each said head adapted to engage one end of each of a plurality of frangible molds under vacuum, means for delivering a plurality of molds to said head for engagement by said engaging means, means for moving said mandrel stepwise over a molten bath of metal, indexing means stopping said mandrel with a head over said bath of metal, means on said mandrel for lowering and raising said head and appended molds so that the other end of said molds is immersed in the metal, means connected to said head for applying vacuum thereto when the molds are immersed, cooling means for cooling the molds and contained metal, and mold removal means breaking the mold on the metal into small pieces and removing the same, said means for delivering a plurality of molds to said head including a guide means delivering elongate molds on a horizontal axis in a single layer thickness, a horizontally movable feed chain spaced from said guide means, toothed wheel means receiving said molds one at a time and delivering the same to said feed chain, lift arm means having spaced fingers equal in number to the plurality of molds engaged by said vacuum heads and each receiving and engaging a mold in the horizontal axis and means rotating said lift arm and molds to a vertical axis position beneath a vacuum head.

4,417,618

AIR-CONDITIONER CONTROL SYSTEM FOR VEHICLES

Akiro Yoshimi, Kariya; Michihiko Kamiya, Handa, and Mitsutoshi Moriya, Gamagori, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jun. 19, 1981, Ser. No. 275,508
Claims priority, application Japan, Jun. 27, 1980, 55-88412
Int. Cl.³ F28D 21/00; F28F 27/00
U.S. Cl. 165—12 6 Claims



1. An air conditioning system for a vehicle compartment of an automotive vehicle comprising:

an air duct having an inlet for receiving air to be conditioned and a first and a second outlets for supplying conditioned air into the vehicle compartment, said first and second outlets being directed to an upper and a lower portion of the vehicle compartment, respectively;

an air conditioner for cooling and heating air received through said inlet of said air duct to supply conditioned air through said first and second outlets of said air duct;

an air distributing damper positioned in said air duct downstream of and in cascade with said air conditioner to be movable to a first, second and third positions, said damper substantially closing said second outlet of said air duct at said first position thereof to supply conditioned air of a comparatively low temperature through said first outlet of said air duct, said damper substantially closing said first outlet of said air duct at said second position thereof to supply conditioned air of a comparatively high temperature through said second outlet of said air duct, and said damper further permitting, at said third position thereof, said first and second outlets of said air duct to supply conditioned air of comparatively low and high temperatures through said first and second outlets of said air duct, respectively;

first means for setting a desired temperature in the vehicle compartment;

second means sensing an actual temperature in the vehicle compartment;

third means sensing an insolation level in the vehicle compartment;

first control means controlling the rate of cooling and heating of said air conditioner to effect a temperature of the conditioned air on the basis of the desired temperature along with other conditional temperature information including an output signal of said third means; and

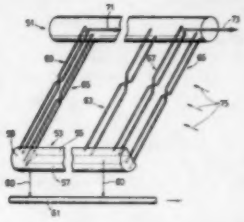
second control means controlling the position of said air distributing damper in relation to the controlled rate of cooling and heating of said air conditioner, said second control means controlling said air distributing damper to move from said second position to said third position when insolation of a level higher than a predetermined level in the vehicle compartment is sensed by said third means and said air distributing damper is at said second position thereof.

4,417,619

AIR-COOLED HEAT EXCHANGER

Kunihiko Minami, Sakai, Japan, assignor to Sasakura Engineering Co., Ltd., Osaka, Japan

Filed Dec. 8, 1980, Ser. No. 214,086
Claims priority, application Japan, Jun. 5, 1978, 53/068186; Jan. 20, 1979, 54-5940; Jan. 20, 1979, 54-5941
Int. Cl.³ F28B 9/10, 1/06
U.S. Cl. 165—113 2 Claims



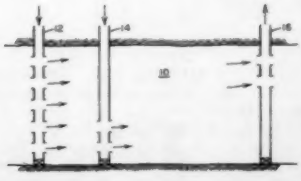
1. An air-cooled heat exchanger comprising at least one set of first tubes and second tubes extending generally in parallel to each other through which fluid being cooled flows in the same direction and across which air flows to cool the fluid within said tubes, said first tubes having a first longitudinal portion and a second longitudinal portion downstream of said first portion with respect to the air flow, and said second tubes having a first longitudinal portion adjacent to and downstream with respect to the air flow from said first portion of said first tubes and a second longitudinal portion adjacent to said second portion of said first tubes and upstream with respect to the air flow of said first portion of said second tubes and also upstream of said second portion of said first tubes, said first and second portions of said tubes being connected by intermediate bent portions, an inlet header and an outlet header lying generally in parallel to each other, means dividing said outlet header into at least two chambers, one set of said first and second tubes extending between said inlet header and one of said two chambers, another set of said first and second tubes extending downstream of said one set with respect to the air flow between said outlet header and the other chamber, and a further set of said first and second tubes extending downstream of said another set with respect to the air flow from each chamber, and a gas extractor communicating with said further set.

4,417,620

METHOD OF RECOVERING OIL USING STEAM

Eleonora G. Shafir, Garland, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Nov. 12, 1981, Ser. No. 320,234
Int. Cl.³ E21B 43/24, 43/30
U.S. Cl. 166—245 2 Claims



1. A method for the recovery of oil from a subterranean, viscous oil-containing formation, said formation penetrated by at least three wells, a first injection well being in fluid communication with a substantial portion of the formation, a spaced

apart production well being in fluid communication with only the upper portion of the formation, and a second injection well located between the first injection well and the production well in fluid communication with the lower portion of the formation and near the first injection well comprising:

(a) injecting steam into the lower portion of the formation via the second injection well;

(b) simultaneously injecting water into the formation via the first injection well so as to build up the formation pressure to a desired pressure level;

(c) maintaining the formation pressure at the desired level of step (b) by continuing water injection; and

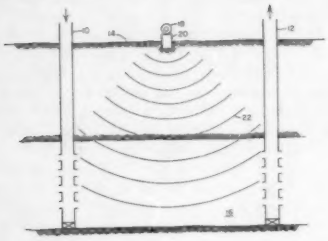
(d) recovering fluids including oil from the upper portion of the formation via said production well until the fluids recovered contain an unfavorable amount of steam or water.

4,417,621

METHOD FOR RECOVERY OF OIL BY MEANS OF A GAS DRIVE COMBINED WITH LOW AMPLITUDE SEISMIC EXCITATION

William L. Medlin; Lucien Masse', and Gary L. Zumwalt, all of Dallas, Tex.

Filed Oct. 28, 1981, Ser. No. 315,781
Int. Cl.³ E21B *43/16*
U.S. Cl. 166—249 **11 Claims**



1. A method for recovering oil from a subterranean, viscous oil-containing formation penetrated by at least one injection well and at least one spaced-apart production well, both of said injection and production wells being in fluid communication with a substantial portion of the formation, comprising:

(a) generating seismic energy and coupling said seismic energy to the earth's surface so as to produce seismic vibrations having a frequency in the seismic range of 0.1 to 500 Hz and an amplitude not exceeding 100 Angstrom units that are transmitted through the oil-containing formation;

(b) simultaneously injecting a gaseous driving fluid into the formation via said injection well whereby said seismic vibration enhance the flow of said gas through the formation toward the production well; and

(c) recovering fluids including oil from the formation via the production well.

4,417,622

WELL SAMPLING METHOD AND APPARATUS

Walter E. Hyde, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Jun. 9, 1981, Ser. No. 272,051
Int. Cl.³ E21B *34/14, 49/08*
U.S. Cl. 166—264 **28 Claims**

1. A method of sampling a fluid produced from a subterranean formation, said method comprising the steps of:

evacuating a sample chamber of a sampler assembly;

lowering said evacuated sampler assembly into a well intersecting said subterranean formation;

flowing said fluid from said subterranean formation around said sampler assembly and upward past said sampler assembly while said sample chamber remains evacuated;

opening a sliding sleeve valve means associated with said evacuated sample chamber by sliding said sliding sleeve valve means from a closed first position to an open second position and thereby communicating said sample chamber with said produced fluid for a period of time sufficent to allow said sample chamber to fill with a sample of said produced fluid; and

closing said sliding sleeve valve means by sliding said sliding sleeve valve means from an open second position to a closed third position to seal said sample of said produced fluid in said sample chamber

whereby said steps of opening and closing said sliding sleeve valve means are accomplished by one continuous sliding movement of said sliding sleeve valve means from a closed first position through an open second position to a closed third position.

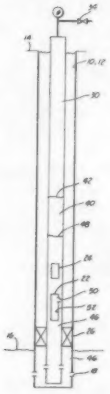
14. A fluid sampling apparatus, comprising:

a housing;

a sampler assembly received in said housing, said sampler assembly including:

a first tubular section having an open first end and a closed second end;

a second tubular section having an open first end and a closed second end, said open end of said second tubular section being telescopingly received in said open end of said first tubular section so that an interior of said first tubular section is communicated with an interior of a second tubular section to define a sample chamber including said interiors of said first and second tubular sections; and



sleeve valve means, associated with said first and second tubular sections, said sleeve valve means being movable from a closed first position through an open second position to a closed third position upon one continuous telescopingly collapsing movement between said first and second tubular sections, said sample chamber being in fluid communication with an annular space between said housing and said tubular sections when said valve means is open;

an actuating mandrel means, slidably received in said housing above said sampler assembly, for engaging an upper end of one of said tubular sections of said sampler assembly and for telescopingly collapsing said first and second tubular sections; and

time delay means, operatively associated with said actuating mandrel means, for retarding downward movement of said actuating mandrel means so that said valve means is open for a predetermined period of time before it moves to said closed third position.

4,417,623

SAND CONSOLIDATION WITH ORGANIC SILICATE

Donald R. Anthony, Plano, Tex., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 10, 1981, Ser. No. 329,497
Int. Cl.³ E21B 33/138
U.S. Cl. 166—294 10 Claims

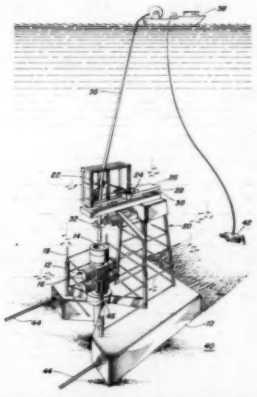
1. In a method for consolidating an unconsolidated sand-like material in a subsurface formation while leaving the formation permeable to the flow of fluids from the formation, the steps comprising (a) injecting an alcohol and organic silicate solution into said borehole, and (b) thereafter injecting water into said borehole.

4,417,624

METHOD AND APPARATUS FOR CONTROLLING THE FLOW OF FLUIDS FROM AN OPEN WELL BORE

Charles E. Gockel, Tomball, Tex., assignor to Conoco Inc., Ponca City, Okla.

Filed Jan. 15, 1981, Ser. No. 225,276
Int. Cl.³ E21B 19/22, 33/13, 43/01
U.S. Cl. 166—362 9 Claims



1. An apparatus for controlling the uncontrolled flow of fluid from an open well bore on the floor of a body of water fluidly communicating the body of water and a subterranean formation, said apparatus comprising:

(a) a slideable base means adapted to slide along the floor of the body of water;

(b) a support means positioned on said base means;

(c) a continuous pipe engaging means positioned on said support means above said base means, said pipe engaging means being adapted to urge a continuous pipe into said open well bore;

(d) a pipe straightener means on said support means positioned to engage said pipe and straighten said pipe above said well bore for urging into said open well bore;

(e) means for moving the base means into position on the floor of the body of water near the open well bore;

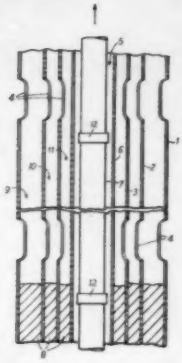
(f) a support vessel adapted to carry and play out the continuous pipe from the surface to the continuous pipe engaging means.

4,417,625

ANNULUS PLUGGING

George S. Henson, Grange-over-Sands, and Joe Brooks, Emsworth, both of England, assignors to Mobell Blowout Services Limited, Dyce, Scotland

Filed Feb. 27, 1981, Ser. No. 239,108
Claims priority, application United Kingdom, Mar. 3, 1980, 8007108; Jul. 14, 1980, 8022921
Int. Cl.³ F21B 33/13
U.S. Cl. 166—387 22 Claims



1. A method of forming a pressure resistant plug in an elongate annulus defined between a production casing of a multi-tubular well and the production tubing of the well within the production casing, the method comprising the steps of:

(1) securing hot tapping apparatus to the outer tubular member;

(2) forming a hot tapping in the outer tubular member;

(3) injecting, through the hot tapping and into the annulus, a first quantity of curable synthetic material; and

(4) allowing the first quantity of curable synthetic material to cure in the annulus;

the method further comprising the steps of blocking the production tubing by boring through the cured synthetic material and the production tubing at the hot tapping in the production casing to form a first hot tapping into the production tubing; forming a second hot tapping through the production casing and the production tubing at a position spaced above or below along the well from the first hot tapping; placing a through-bar across the production tubing at the upper of the hot tapping; injecting tubing blocking material at the lower hot tapping; and allowing the blocking material to lodge against the through-bar and to block the production tubing.

4,417,626

ADJUSTABLE PENDENT SPRINKLER ASSEMBLY

Arne Hansen, Doylestown, Pa., assignor to Interfit, Inc., Wayne, Pa.

Filed Jul. 12, 1982, Ser. No. 397,223
Int. Cl.³ A62C 37/08
U.S. Cl. 169—37 9 Claims

1. An adjustable pendent sprinkler assembly comprising:

a thermally activated sprinkler head having a releasable cap,

a tube spaced above the sprinkler head for securing the assembly to a sprinkler system tee,

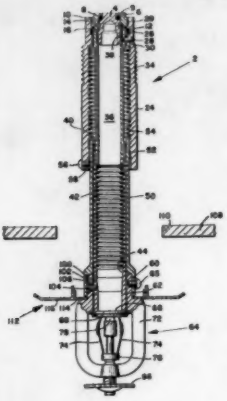
a plug mounted in the upper end of the tube,

releasable means for releasably holding the plug against downward movement,

an outer sleeve threaded to the tube and fixedly secured to the sprinkler head for raising and lowering the sprinkler head,

an inner sleeve mounted in the tube for axial movement only and spaced above the sprinkler head with its upper end holding the releasable means against release,

an intermediate sleeve threaded to the inner sleeve and having its lower end supported by said releasable cap to releasably support the assembled inner and intermediate sleeves,



said inner and intermediate sleeves having inner diameters greater than the outer diameter of the plug to provide for passage of the plug therethrough on its release, and

means for connecting the intermediate sleeve to the sprinkler head and tube assembly for rotational movement therewith and relative axial movement with respect thereto, for a given amount of rotation said intermediate sleeve and said outer sleeve moving the same axial distance.

4,417,627

APPARATUS FOR BREAKING ROCK LOCATED IN A FIELD

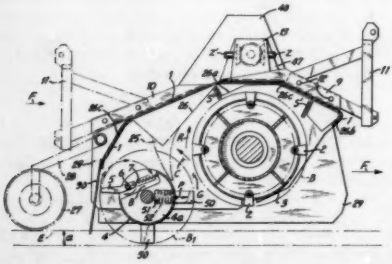
Josef Willibald, D-7771 Frickingen 2 (Altheim), Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 312,830

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1980, 3039553

Int. Cl.³ A01B *43/00*

U.S. Cl. 172—45 **8 Claims**



1. Apparatus for breaking rock found in soil such as in a field used for farming or for cutting sub-surface obstructions in the field, comprising a hood-like housing having a forward end and a rearward end relative to the direction of movement of the apparatus over a field, a work shaft rotatably mounted under said hood and the axis of said work shaft extending transversely of the direction of movement of the apparatus, said work shaft is divided into hollow pocket-like sections with the radially outer circumferential surface of said pocket-like sections being closed, flail-like parts mounted on and extending radially outwardly from the radially outer circumferential surface of said work shaft and spaced across the axial direction thereof and disposed offset to one another around the circumference of said work shaft, each said flail-like part is mounted in one said pocket-like section within said work shaft and extends generally radially outwardly from the closed radially outer circumferential periphery of said pocket-like section, a drum located under said hood-like housing and mounted for rotation about an axis extending in generally parallel relation with the axis of said work shaft and having a circumferential periphery extending around the axis of rotation thereof, said drum is spaced rearwardly from said work shaft relative to the direction of movement of the apparatus, prongs mounted on and extending outwardly from the circumferential periphery of said drum, said prongs travel in a circular path around the axis of said drum and the radially outer edge of said circular path is located lower than the outer edge of the circular path of said flail-like parts rotating about the axis of said work shaft, and the outer edges of the circular paths of said prongs and said flail-like parts are approximately tangent to one another at the closest point therebetween where material is transferred from said prong to said flail-like parts.

4,417,628

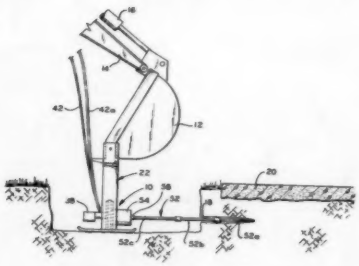
EARTH BORING APPARATUS

Richard W. Gessner, 1038 Eleventh St. NE., Massillon, Ohio 44646

Filed Oct. 5, 1981, Ser. No. 308,280

Int. Cl.³ E21B *7/02*

U.S. Cl. 173—29 **7 Claims**



1. A boring apparatus having a rotatably driven auger for use in combination with a bucket pivotly attached to a movable boom of a vehicular means, comprising:

(a) an open upstanding frame means including a pair of spaced upright members and an upper bucket attaching means;

(b) means for detachably connecting said upper bucket attaching means to the bucket with said pair of spaced upright members extending outwardly of the bucket;

(c) a mounting plate extending between said pair of upright members;

(d) means for removably affixing said mounting plate to said pair of spaced upright members whereby said mounting plate can be installed in one of two positions;

(e) coupling means affixed to said mounting plate; and

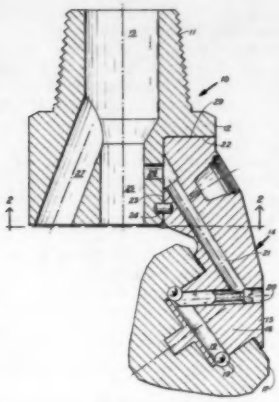
(f) power drive means affixed to said mounting plate for rotatingly driving said coupling means whereby said mounting plate can be installed to operate the auger for producing a bore hole in either axial direction with respect to the bucket.

4,417,629

DRILL BIT AND METHOD OF MANUFACTURE

Duane W. Wallace, Houston, Tex., assignor to Reed Rock Bit Company, Houston, Tex.

Filed May 13, 1981, Ser. No. 263,333
Int. Cl.[3] B21K 5/02; E21B 9/08
U.S. Cl. 175—365 8 Claims



5. A rolling cutter drill bit comprising:

a body member having a threaded upper portion and at least one recess in its side adjacent the lower end thereof, the recess being defined by an arcuate side wall configured as a portion of a surface of revolution with its axis generally parallel to the central longitudinal axis of the body member, and by an upper end surface extending generally perpendicular to the central longitudinal axis of the body member; and

at least one lug assembly comprising a lug member having side and upper end surfaces corresponding in size and configuration to said side and upper end surfaces defining said recess, with the lug member fitted in the recess in surface-to-surface engagement, the lug member further having a bearing journal at the lower end thereof, the lug assembly further comprising a roller cutter rotatably mounted on the bearing journal; whereby, during assembly of the bit, when the lug member is to be secured in the recess, the angular position of the lug member in the recess and thus the skew angle between the axis of the journal and a radial line emanating from the central axis of the body member and extending through the journal may be set at a predetermined position and a predetermined angle, respectively.

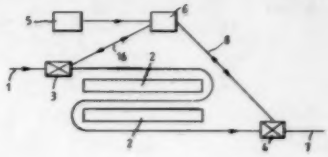
4,417,630

METHOD AND APPARATUS FOR CHECKING THE WEIGHT OF CONSIGNMENTS ASSEMBLED IN CONTAINERS

Otto Weber, Kurpfalzstr. 21, D-6945 Hirschberg; Klaus Ohnsmann, Leharstr. 32, D-6040 Weinheim, and Ferdinand Christ, Heidelberger Str. 7, D-6831 Brühl, all of Fed. Rep. of Germany

Filed Oct. 1, 1981, Ser. No. 307,505
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3042902
Int. Cl.[3] G01G 19/52, 13/14; G06K 9/00
U.S. Cl. 177—1 2 Claims

1. A method for checking the weight of consignments assembled in containers, comprising the steps of measuring the net weight of an empty container being introduced for passage on a conveyor belt and transmitting the weight to a consignment computer, measuring the weight of said container filled with the articles of the consignment during passage and transmitting the weight to said computer, determining the difference of said two weights as the actual weight of the consignment and comparing the actual weight against the fed-in normal weight of the consignment in question, whereupon in case of a deviation of said actual weight from said nominal weight above a predetermined tolerance boundary the container in question is sorted out and the other containers are conveyed on, reading a



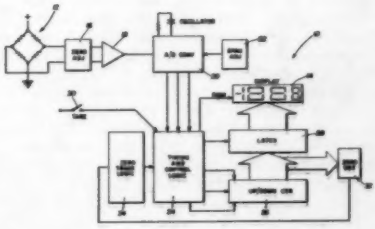
recognition code associated with each of said containers during the weighing process and transmitting said code to said computer, transmitting said measured weights to said consignment computer as soon as the empty and filled weights are determined, comparing said empty weight with said filled weight of the same container to each other in relation to a recognition code, and determining the proper comparison of the weights.

4,417,631

ZERO TRACKING CIRCUIT FOR ELECTRONIC WEIGHING SCALE

James Johnson, Webster, Tex., assignor to Sensor Developments, Inc., Lake Orion, Mich.

Filed Dec. 28, 1981, Ser. No. 335,110
Int. Cl.[3] G01G 3/14, 13/14
U.S. Cl. 177—210 FP 10 Claims



1. In a weighing device including a weight transducer for developing an analog electrical signal proportional to an applied weight, converter means for converting the analog weight signal to a corresponding digital output signal, said converter means including resettable counter means for accumulating a count as a function of said weight signal, and a digital display for displaying said output count, the improvement comprising:

a zero tracking circuit including decoder means responsive to an output of said counter means for detecting a low magnitude counter output that is characteristic of drift and means responsive to said decoder means for resetting said counter means,

said resetting means including means responsive to said decoder means for generating reset pulses identifying low magnitude counter outputs characteristic of drift, accumulator means for accumulating said reset pulses and means responsive to a predetermined number of reset pulses in said accumulator means for resetting said counter means.

4,417,632

AUTOMATIC WEIGHING METHOD AND DEVICE

Peter Lohberg, Friedrichsdorf, Fed. Rep. of Germany, assignor to Battelle Institut e.V., Frankfurt am Main, Fed. Rep. of Germany

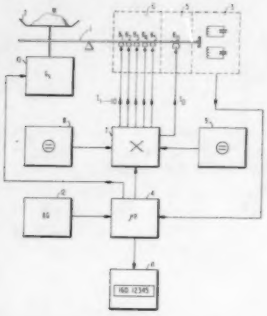
PCT No. PCT/EP80/00132, § 371 Date Jul. 13, 1981, § 102(e) Date Jul. 13, 1981, PCT Pub. No. WO81/01463, PCT Pub. Date May 28, 1981

PCT Filed Nov. 14, 1980, Ser. No. 285,086

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1979, 2945940

Int. Cl.³ G01G *7/00, 1/26*

U.S. Cl. 177—212 11 Claims



1. Process for the automatic weighing, in case of which the deviation of the balance beam from the rest position is compensated within the scope of a regulating process electromagnetically and the compensation force needed for this is used as a measure for the mass to be determined, characterized in that compensating forces are used which are graded according to decreasing power of a decadal numerical system, whereby, starting out from larger to smaller compensation force the weight-value of each power is always compensated by (n−1) quantization steps, whereby n signifies that number of quantization steps within the used decadal system which causes an overcompensation, in that the weight is determined from the sum of the compensation forces of all powers, and in that the weighing result is determined from the addition of the sum of the compensation forces of all powers and the sum of numerically and electronically stored correction values, whereby the correction values correspond to the compensation errors which were determined once within the scope of one calibrating process for each compensation step.

4,417,633

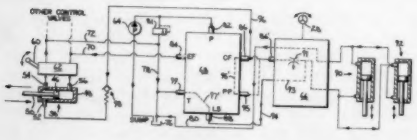
HYDRAULIC SYSTEM FOR PREVENTING LEAK DOWN OF HYDRAULIC IMPLEMENTS

Donnell L. Dunn, Terre Haute, Ind., assignor to J. I. Case Company, Racine, Wis.

Filed Mar. 18, 1981, Ser. No. 245,092

Int. Cl.³ B62D *5/06*

U.S. Cl. 180—132 1 Claim



1. A hydraulic power steering system for selectively effecting actuation of a steering motor to pivot one or more of the wheels supporting a tractor and for actuating at least one hydraulic motor carried by the frame of the tractor and having a piston, a cylinder, and a piston rod, said hydraulic motor being pivoted between the frame of said tractor and the free end of an arm pivoted at one of its ends to the tractor frame so that when actuated said hydraulic motor pivots said arm between raised and lowered positions, said system being adapted to pressurize said one hydraulic motor during transport of said tractor attendant to actuation of said steering motor and, comprising:

(a) a source of pressurized fluid for operating the steering motor and the hydraulic motor;

(b) a closed-center steering control valve having a center-neutral position, disposed in series flow relationship between said source of pressurized fluid and the steering motor, defining a variable orifice operable to establish a fluid flow rate from said steering control valve to the steering motor;

(c) selectively operable control valve means, disposed in series flow relationship between said source of pressurized fluid and said hydraulic motor, for operating said hydraulic motor; to pivot said arm between said raised and lowered positions

(d) pressure compensating valve means, disposed in series flow relationship between said source of pressurized fluid and said control valve means and said steering control valve respectively, for controlling the flow of fluid from said source to said steering control valve and said control valve means to maintain a generally constant pressure drop across said variable orifice, said pressure compensating valve means, including

an inlet port in fluid communication with said source of pressurized fluid,

a controlled flow steering outlet port in direct fluid communication with the inlet of said variable orifice on said steering control valve,

an excess flow loader outlet port in fluid communication with the inlet of said control valve means through which pressurized fluid is supplied for operating said hydraulic motor, and

a load sensing port in fluid communication with the outlet of said variable orifice of said steering control valve; and

(e) an additional hydraulic connection line bypassing said control valve means, said additional hydraulic line interconnecting said steering outlet port on said pressure compensating valve with a flow port on said cylinder on that one side of the piston in said cylinder which if leaked would pivot said arm away from its raised position, said additional hydraulic line directing hydraulic fluid flow from said pressure compensating valve to said hydraulic motor to replenish leakage from said one side of said piston whenever said steering control valve is operated to produce flow through said first variable orifice, thereby preventing said piston rod from repositioning due to leaking during transport of said tractor to maintain said arm in raised position, said additional hydraulic line including a one-way flow check valve to prevent reverse fluid flow in said additional hydraulic line from said motor directly to said pressure compensating valve means.

4,417,634

ELEVATING TRANSPORTER WITH MECHANICAL DRIVE

Manfred W. Quaeck, Redmond, and Douglas Ross, Woodinville, both of Wash., assignors to CTEC Company, Bellevue, Wash.

Filed Feb. 9, 1981, Ser. No. 232,561

Int. Cl.³ B62D *63/00*

U.S. Cl. 180—22 5 Claims

1. An elevating transport vehicle for raising and lowering heavy loads and transporting them, said vehicle comprising:

an elongated transport frame assembly,

a first axle assembly with a first differential and a set of wheels,

a second axle assembly in tandem with the first axle assembly

and having a set of wheels and a second differential aligned with the first differential,

a central telescopic drive shaft extending between said differential and having universal joint connections therewith,

power means carried by the vehicle frame and operatively connected with one of said differentials,

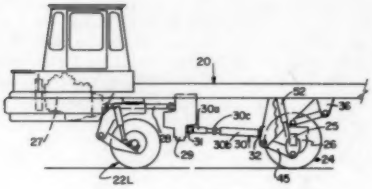
said first axle assembly having a first axis of wheel rotation, and said second axle assembly having a second axis of wheel rotation parallel to the first axis,

a first tie rod pivotally connected at an inner end to the frame assembly at a pivot axis equidistant from said wheel rotation axes and above the level thereof, and pivotally connected at an outer end to the first axle assembly at a pivot axis located above the first wheel rotation axis,

a second tie rod pivotally connected at an inner end to the frame assembly at a pivot axis transversely aligned with the pivot axis at the inner end of the first tie rod, and pivotally connected at an outer end to the second axle assembly at a pivot axis located above the second wheel rotation axis,

a first pair of depending frame legs provided by the vehicle frame assembly at opposite sides of the first differential, and a second pair of depending frame legs provided by the vehicle frame assembly at opposite sides of the second differential,

a first pair of swing arms located on opposite sides of said first differential and a second pair of swing arms located on opposite sides of said second differential, said first and second pairs of swing arms having respective pivotal connections on the underside of the first and second axle



assemblies and extending in opposite directions from one another and making pivotal connections with said first and second pairs of legs, respectively,

a first pair of elevating hydraulic cylinder units depending from pivotal connections with the vehicle frame assembly to pivotal connections with said first pair of swing arms, and a second pair of elevating hydraulic cylinder units depending from pivotal connections with the vehicle frame assembly to pivotal connections with said second pair of swing arms,

said first tie rod and first pair of frame arms sloping downwardly from their pivotal connections with the vehicle frame assembly when the first pair of cylinder units are fully extended, and sloping upwardly from such pivotal connections when the first pair of cylinder units are fully retracted, and said second tie rod and second pair of frame arms sloping downwardly from their pivotal connections with the vehicle frame assembly when the second pair of cylinder units are fully extended, and sloping upwardly from such pivotal connections when the second pair of cylinder units are fully retracted, to thereby minimize angulation of said universal joint connections and telescopic movement of said central drive shaft,

a first pair of idler bogie units swivel-mounted for steering beneath the vehicle frame assembly at opposite sides, and a second pair of idler bogie units also swivel-mounted for steering beneath the vehicle frame assembly at opposite sides, said first and second pairs of idler bogie units having steering axes located at opposite ends of the vehicle frame assembly from one another, each of said bogie units having a pair of wheels and an elevating hydraulic cylinder unit,

steering means for selectively turning said first and second pairs of idler bogie units in opposite directions to steer the vehicle, and

hydraulic means carried by the vehicle frame for operating all of said elevating hydraulic cylinder units for evenly raising and lowering the entire vehicle frame assembly.

4,417,635

RAPID FIXING DEVICE CONSISTING OF A SPRING UNIT

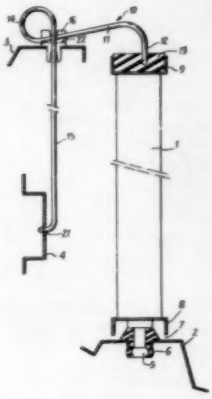
Yves Thepault, Velizy, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Aug. 19, 1981, Ser. No. 294,217

Claims priority, application France, Aug. 22, 1980, 80 18384

Int. Cl.³ B60K *11/04*

U.S. Cl. 180—68 R **17 Claims**



1. An arrangement for mounting a cooling system radiator in the engine compartment of an automobile vehicle, said radiator comprising a base portion and a top portion and said engine compartment comprising a beam structure including a horizontal bottom beam member for supporting and positioning said base portion of said radiator, a horizontal top beam member and a horizontal intermediate stiff beam member, said top and intermediate beam members being transversely offset on the same side with respect to said bottom beam member, said arrangement comprising:

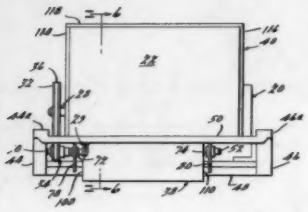
a one-piece spring wire unit including a first leg and a second leg connected together at one end thereof so as to extend substantially perpendicular to one another when the spring wire unit is not strained, said spring wire unit being mounted under strain so that said first leg extends from a connection with said second leg from above said top beam member substantially horizontally over said radiator, a free end of said first leg being pressed downwardly on said top portion of said radiator, and said second leg extending from a connection with said first leg from above said top beam member substantially vertically downwardly through said top beam member while being movable and guided vertically in said top member, wherein a free end of said second leg further comprises means for fixing the free end of said second leg to said spring wire unit so as to transfer to said intermediate beam member a compression force supplied by the free end of the first leg of the spring wire unit to the top portion of the radiator.

4,417,636

COOLING FAN DUCTING

Joseph S. Mazur, Livonia, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 22, 1981, Ser. No. 276,109
Int. Cl.³ B60H 1/24
U.S. Cl. 180—68 R 11 Claims



1. In a vehicle of the type including a liquid-cooled engine having a housing and a crankshaft mounted therein for rotation about an axis, a radiator disposed in a plane substantially parallel to the axis and spaced from the housing for cooling the liquid by air directed therethrough, a cross-flow fan assembly for pulling air through the radiator toward the engine housing, the improvement comprising:

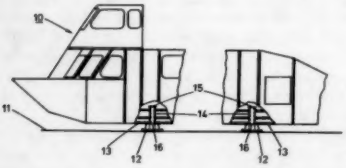
an air inlet duct assembly for directing the cooling air to the cross-flow fan inlet, said duct assembly having an inlet defined by the radiator, by members extending from the radiator to the engine housing, and additionally by a portion of the engine housing.

4,417,637

AIR CUSHION VEHICLE

Derek J. Hardy, and Michael W. Eldridge, both of Cowes, England, assignors to British Hovercraft Corporation Ltd., Yeovil, England

Filed Feb. 17, 1982, Ser. No. 349,610
Claims priority, application United Kingdom, Feb. 20, 1981, 8105518
Int. Cl.³ B60V 1/18
U.S. Cl. 180—116 7 Claims



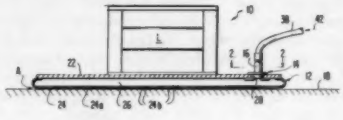
1. An air cushion vehicle (A.C.V.) including a rigid base structure having an under surface facing towards a ground surface over which the vehicle operates and an upper surface facing away from said ground surface, a plurality of sleeve members built into the rigid base structure and each extending between an upper end which opens at the upper surface of the rigid base structure and a lower end which opens at the under surface of the rigid base structure and which is co-axial with a bore through a landing pad structure attached to the under surface of the rigid base structure, each sleeve member being adapted to receive a support leg passed into the upper end of the sleeve member so as to extend therethrough and project from the lower end of the sleeve member, and locking means for securing each support leg in its projected position relative to the sleeve member.

4,417,638

AIR INLET AND AIR DISPERSION GROMMET AND IMPROVED AIR PALLET BEARING SAME

Bruce F. Harvey, Newark, Del., assignor to American Industrial Research, Newark, Del.

Filed Oct. 14, 1981, Ser. No. 311,227
Int. Cl.³ B60V 1/04
U.S. Cl. 180—125 15 Claims



1. An air inlet and air dispersion grommet for a planar air pallet materials handling system or the like, said system comprising:

a planar, generally rigid backing member,

a thin flexible sheet member including a bottom portion bearing perforations underlying said backing member,

said backing member supporting a load,

means including at least said thin flexible sheet member forming a plenum chamber for retaining pressurized air between the bottom portion of said sheet and said backing member and for creating a thin air film between the bottom portion of said sheet and an underlying support surface for allowing frictionless movement of said load over said underlying supporting surface,

said grommet being mounted to one of said members and comprising a hollow annular body sealably fixed to said one member and opening to said plenum chamber,

said body including at least one radially outwardly projecting inner flange over a portion of its periphery, within said plenum chamber and functioning to space said members apart,

said body also including slot means within a peripheral portion of said body opening to said plenum chamber and to the interior of said hollow body, to the side of said inner flange, and

means for insuring air flow from a tubular air supply nozzle bearing air under pressure when inserted into said annular body through said slot means,

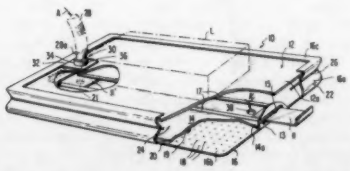
whereby, insertion of the end of said tubular air supply nozzle bearing air under pressure into said hollow annular body permits rapid jacking of said load, dispersion of the air throughout said plenum chamber, and creation of said thin film air bearing.

4,417,639

DYNAMIC GAS PRESSURED JACKING STRUCTURE WITH IMPROVED LOAD STABILITY AND AIR PALLET EMPLOYING SAME

Jack Wegener, 830 Chambers Ave., Gloucester City, N.J. 08030

Filed Nov. 16, 1981, Ser. No. 322,035
Int. Cl.³ B60V 1/04
U.S. Cl. 180—125 18 Claims



1. A dynamic air pressure jacking structure with improved load stability for a load carried thereby and jacked vertically

upwardly from an underlying relatively rigid support surface, said structure comprising:

flexible film means forming a jacking plenum chamber and bearing said load,

an air inlet hole leading to said jacking plenum chamber to one side of the load,

an air outlet hole leading from said jacking chamber and laterally to the side of said inlet hole and to the opposite side of said load from said air inlet hole,

means for supplying compressed air fluid to said inlet hole, for flow through said jacking plenum chamber and for discharge through said outlet hole, and wherein the cross-sectional area of the outlet hole is substantially less than the cross-sectional area of said inlet hole such that the load is jacked vertically upwardly without danger of tipping,

and wherein said air outlet hole functions as least partially to provide an anti-ballooning effect to said dynamic fluid pressure jacking structure.

4,417,640

ELECTRICALLY DRIVEN OIL PRESSURED POWER STEERING APPARATUS

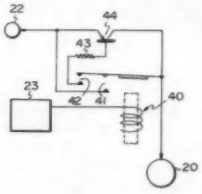
Michio Abe, Kasugai, and Naoyuki Maeda, Inuyama, both of Japan, assignors to Tokai TRW & Co., Ltd., Aichi, Japan

Filed Jul. 20, 1981, Ser. No. 284,539

Claims priority, application Japan, Oct. 3, 1980, 55-138340; Dec. 8, 1980, 55-172789

Int. Cl.³ B62D *5/06*

U.S. Cl. 180—142 **16 Claims**



1. An apparatus for operating a power steering motor and turning a steerable vehicle wheel in response to rotation of a steering wheel, said apparatus comprising a hydraulic pump, electric motor means connected with said pump for driving said pump to supply hydraulic fluid to the power steering motor, a vehicle speed sensor, and control means connected with said electric motor means and vehicle speed sensor for energizing said motor means, said control means comprising an electrical circuit having a first circuit portion for conducting electrical energy to energize said motor means to drive said pump at a first angular velocity while the vehicle is traveling at a first speed, a second circuit portion connected in parallel with said first circuit portion for conducting electrical energy to energize said motor means to drive said pump at a second angular velocity which is less than the first angular velocity while the vehicle is traveling at a second speed which is greater than the first speed, and means for rendering said first circuit portion ineffective to conduct electrical energy to said motor means while the vehicle is traveling at the second speed.

4,417,641

SYSTEM FOR CONTROLLING TWO-WHEEL AND FOUR-WHEEL DRIVES

Hayashi Kageyama, Ohta, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 22, 1981, Ser. No. 276,326

Claims priority, application Japan, Jun. 27, 1980, 55-88331

Int. Cl.³ B60K *17/34*

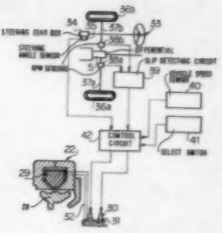
U.S. Cl. 180—247 **13 Claims**

7. A system for controlling driving with two wheels or four wheels, respectively in a vehicle powered by an internal combustion engine comprising

transmission means for transmitting power from said engine to two main wheels of said vehicle,

an electromagnetic clutch means having a magnetizing coil for selectively transmitting said power to two auxiliary wheels of the vehicle,

a select switch means for energizing said magnetizing coil with clutch current for engaging said electromagnetic clutch means,



means for detecting steering angle for producing an output signal with a level which increases with an increase of the steering angle, and

control circuit means for controlling the clutch current applied to said magnetizing coil of said electromagnetic clutch means by decreasing said clutch current with an increase in the level of said output signal when said output signal of said steering angle detecting means is applied to said control circuit means when driving with the power transmission to the four wheels.

4,417,642

FOUR-WHEEL-DRIVE SYSTEM FOR AUTOMOTIVE VEHICLE

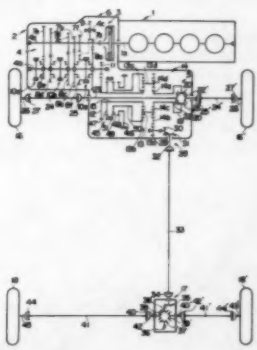
Kunihiko Suzuki, Fujisawa, and Akihiko Muraoka, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Mar. 31, 1981, Ser. No. 249,418

Claims priority, application Japan, Apr. 25, 1980, 55-55733

Int. Cl.³ B60K *17/34*

U.S. Cl. 180—249 **11 Claims**



1. A four-wheel-drive system for a vehicle having at least two pairs of road wheels consisting of a pair of front road wheels and a pair of rear road wheels, comprising

a power unit having an output shaft rotatable about an axis in a lateral direction of the vehicle;

a power transmission gear unit including transmission input

and output shafts each having an axis of rotation substantially parallel with the axis of rotation of the output shaft of the power unit, and gears mounted on the transmission input and output shafts and arranged to be capable of selectively producing a plurality of ratios between the speeds of rotation of the transmission input and output shafts;

a speed reduction gear with which the transmission output shaft is held in driving engagement for driving the reduction gear to rotate about an axis of rotation thereof;

a first final reduction gear unit including gears arranged to split an input driving power into two output components to be transmitted to one of said two pairs of road wheels;

a second final reduction gear unit including gears arranged to split an input driving power into two output components to be transmitted to the other of said two pairs of road wheels;

first and second planetary gear assemblies each including an externally toothed sun gear rotatable about an axis of rotation thereof, an internally toothed ring gear coaxially encircling the sun gear and rotatable about the axis of rotation of the sun gear, at least two planet pinions each held in mesh with the sun gear and the ring gear and rotatable about an axis of rotation substantially parallel with the axis of rotation of the sun gear, and a pinion carrier interconnecting the planet pinions together so that the planet pinions are revolvable together around the axis of rotation of the sun gear, the speed reduction gear being held in driving engagement with one of the sun gear and the pinion carrier of the first planetary gear assembly, the other of the sun gear and the pinion carrier of the first planetary gear assembly being connected to and rotatable with the pinion carrier of the second planetary gear assembly, one of the sun gear and the ring gear of the second planetary gear assembly being in driving connection to one of the first and second final reduction gear units and the other of the sun gear and the ring gear of the second planetary gear assembly being in driving connection to the other of said first and second final reduction gear units;

a stationary member to be held stationary in the vehicle; and

low-high-speed shifting clutch means operative to provide coupling selectively between said speed reduction gear and the ring gear of the first planetary gear assembly and between said stationary member and the ring gear of the first planetary gear assembly.

4,417,643

WHEEL HUB ASSEMBLY FOR AN AUTOMOBILE VEHICLE

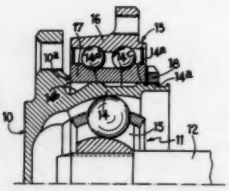
Pierre Guimbretiere, Neauphle le Chateau, France, assignor to Glaenzer Spicer, Poissy, France

Filed Aug. 19, 1981, Ser. No. 294,354

Claims priority, application France, Sep. 8, 1980, 80 19336

Int. Cl.³ B60K *17/32*

U.S. Cl. 180—254 **16 Claims**



1. A wheel hub assembly comprising a wheel flange, a rolling bearing comprising an inner race in contact with the flange, an outer race, and rolling elements interposed between said races, and a transmission joint disposed radially inside the rolling bearing and having an outer element which is connected to rotate with the flange and with the inner race of the bearing, the wheel flange and the inner race of the bearing being formed by two distinct members, an axial connection between axially adjacent end surfaces of said two members being limited to a ring portion which is on at least one of said two members, has a radial extent of less than the radial extent of said adjacent end surface of said inner race of the bearing and is located adjacent the radially outer periphery of the inner race and an axially-extending surface of contact between the outer element of the joint and the inner race of the bearing, said surface of contact being interrupted by at least one empty recess in the outer element of the joint.

4,417,644

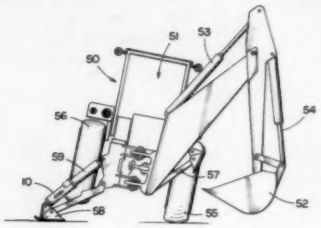
ANTI-THEFT DEVICE AND METHOD FOR DETERRING THEFT OF MOBILE EQUIPMENT

Paul D. Brogard, 3425 E. Mt. Ebal Rd., Bloomington, Ind. 47401

Filed Jun. 15, 1981, Ser. No. 273,853

Int. Cl.³ B60R *25/04*

U.S. Cl. 180—287 **23 Claims**



1. An anti-theft device for mobile equipment, the mobile equipment including propelling means for moving the equipment about, the equipment further including at least one telescoping support member extensible to a position in which the telescoping support member renders the equipment immobile, the telescoping support member including a cylinder and a shaft extensible thereform, said device comprising:

(a) a hollow strut, said strut having an external longitudinal surface and having a cavity along its length which is dimensioned to receive the shaft of the telescoping support member, said strut being of sufficient length to maintain the telescoping support member in said equipment immobilizing position;

(b) mounting means for mounting said strut lengthwise about the shaft, said means including means for creating an open condition in which there is a full length passageway between said longitudinal external surface and said cavity, said passageway being adapted to receive the shaft through said passageway and into said cavity, and means for creating a closed condition in which the shaft is completely enclosed by said strut;

(c) anti-theft locking means for locking said strut in said closed condition about the shaft, said locking means including an anti-theft locking mechanism;

(d) lock concealment means for concealing said anti-theft locking mechanism whenever said strut is engaged with the retracted cylinder and shaft.

4,417,645

PORTA CLIMB CLIMBING TREE STAND

Reese E. Untz, Rte. 7, Box 665J, Charlotte, N.C. 28213

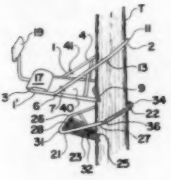
Filed Apr. 20, 1981, Ser. No. 255,829

Int. Cl.³ A45F *3/26*; A47C *9/10*; A01M *31/02*

U.S. Cl. 182—135 **9 Claims**

1. An apparatus for climbing a tree or like columnar member comprising seat frame means for disposition about a tree for

selective engagement therewith for supporting a user's main body and selective disengagement therefrom for sliding vertically therealong and foot frame means for disposition about a tree below said seat frame means for selective engagement therewith for supporting the user's feet and selective disengagement therefrom for sliding vertically therealong, said seat frame means and said foot frame means being operable by alternate engagement and disengagement, respectively, with the tree for alternating incremental movement thereof upwardly and downwardly along the tree, said seat frame means including a main seat frame member for engaging the tree at one side thereof and a seat bracing frame member for engaging the tree at the opposite side thereof, said main seat frame member including a unitary length of tubing formed into a generally U-shaped providing spaced seat frame arms and tree-engaging brace means rigidly welded to each said seat frame arm and extending therefrom in generally the same direction thereas for bracing engagement with said one side of the tree and said seat bracing frame member including a unitary length of tubing formed into a generally U-shape providing spaced seat bracing frame arms, said spaced seat frame arms and said spaced seat bracing frame arms being telescopically engagable for encircling disposition about the tree, and means selectively engagable with said seat frame arms and said seat bracing frame arms for rigidly affixing them in telescoping relation, whereby said main seat frame member and said seat bracing frame member respectively have substantially no points of increased susceptibility to stress and whereby in disposition about the tree increased stress is created in said seat frame means substantially only at said affixing means at said telescoping seat frame arms



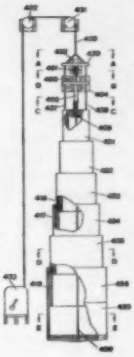
and seat bracing frame arms for maximized strength of said seat frame means and only compressive stress is exerted on the weld locations between said tree-engaging brace means and said main seat frame member, and said foot frame means including a main foot frame member for engaging the tree at said one side thereof and a foot bracing frame member for engaging the tree at the opposite side thereof, said foot frame member including a unitary length of tubing formed into a generally U-shaped providing spaced foot frame arms, tree-engaging platform brace means rigidly welded to said main foot frame member and extending therefrom in generally the same direction as said foot frame arms for bracing engagement with said one side of the tree, and bracing struts extending convergingly from said foot frame arms to a central location on said platform brace means for engagement by the feet of the user for manipulating movement of said foot frame means upward and downward along the tree, and said foot bracing frame member including a unitary length of tubing formed into a generally U-shape providing spaced foot bracing frame arms, said spaced foot frame arms and said spaced foot bracing frame arms being telescopically engageable for encircling disposition about the tree, and means selectively engagable with said foot frame arms and said foot bracing frame arms for rigidly affixing them in telescoping relation, whereby said main foot frame member and said foot bracing frame member respectively have substantially no points of increased susceptibility to stress and whereby in disposition about the tree increased stress is created in said foot frame means substantially only at said affixing means at said telescoping foot frame arms and foot bracing frame arms for maximized strength of said foot frame means and only compressive stress is exerted on the weld location between said tree-engaging platform brace means and said main foot frame member.

4,417,646

COUNTERWEIGHT SYSTEM

Charles Lindbergh, 104 N. Star Ave., Panama City, Fla. 32401

Continuation of Ser. No. 934,402, Aug. 17, 1978, abandoned.
This application Dec. 2, 1980, Ser. No. 212,292
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1977, 2737493; Dec. 28, 1977, 2758383
Int. Cl.³ B66B *17/12*
U.S. Cl. 187—94 **3 Claims**



1. A counterweight system to enable cyclic movements of a load by the application of low external power to the system comprising a counterweight connected in counter-balancing relationship to a load, said counterweight being divided into two separate groups of separately formed counterweight segments of graduated size, a first movement means connected between the load and one group of counterweight segments and being operable to elevate and lower in succession the counterweight segments in said one group one relative to another, and a second movement means independent from the first movement means connected between the other group of counterweight segments and an external power means, the second movement means being operable under influence of the external power means to elevate and lower the counterweight segments in said other group relative to the counterweight segments in said one group.

4,417,647

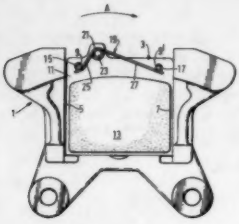
DISC BRAKES AND FRICTION PAD ASSEMBLIES THEREFOR

Edmund Cotter, Birmingham; Francis Whatley, Uplands, both of England, and Heinz W. Baum, Saarbrucken-Dudweiler, Fed. Rep. of Germany, assignors to Lucas Industries Limited, Birmingham, England

Filed Feb. 27, 1981, Ser. No. 239,123
Claims priority, application United Kingdom, Mar. 1, 1980, 8007044; Apr. 19, 1980, 8012977
Int. Cl.³ F16D *65/40*
U.S. Cl. 188—73.38 **14 Claims**

1. A friction pad assembly for a disc brake, comprising a backing plate and a pad of friction material secured thereto, the backing plate having at least one hole offset from the central axis of the assembly, through which a pad support pin can pass to engage a wire spring attached to and positively supported on the backing plate at one position only which position is nearer to one side edge of the backing plate than the other, said

wire spring having two arms oppositely directed from the spring's position of attachment to produce an assymetric load-



ing effect on the pad assembly when installed in a disc brake such that one arm of said spring engages said pin.

4,417,648

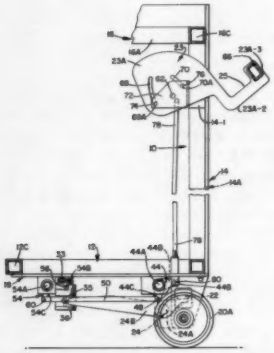
BRAKING ARRANGEMENT FOR VEHICLES

Brenda L. Anderson, Sutter Creek, and Ronald J. Boyd, Sacramento, both of Calif., assignors to General Electric Company, Milwaukee, Wis.

Filed Jul. 14, 1981, Ser. No. 283,170

Int. Cl.³ B60T *7/10*

U.S. Cl. 188—119 **19 Claims**



1. In a vehicle comprising a framework and at least one wheel supported for rotation by said framework, a brake surface carried by said at least one wheel, a brake shoe mounted for movement into or out of braking engagement with said brake surface, a support means mounted on said framework for angular pivotal movement about a substantially horizontal axis which lies substantially transverse of the longitudinal axis of said vehicle, said brake shoe being mounted on said support means for pivotal movement with said support means, a spring means mounted to normally exert force against said support means to cause said support means to pivotally move in a direction which moves said brake shoe into engagement with said brake surface whereby to normally provide a "dead man" brake, an actuator member for effecting movement of said brake shoe out of engagement with said brake surface, means connecting said actuator member to said support means whereby a predetermined movement of said actuator member moves said support means against the force of said spring means to move said brake shoe out of engagement with said brake surface, a brake control handle mounted on said framework, a first cam means including a cam element and a second cam means including a cam follower element, one of said cam means being carried by said control handle, the other of said cam means being connected to said actuator member and engageable with said cam means carried by said handle, whereby movement of said control handle to a predetermined position is effective to cause said predetermined movement of said actuator member due to the cooperative interaction of said first and said second cam means with each other, whereby to move said brake shoe out of engagement with said brake surface.

4,417,649

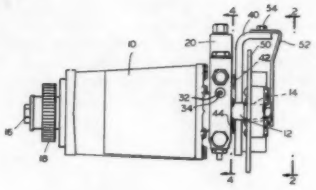
ARRANGEMENT FOR THE BRAKE SYSTEM OF A HYDROSTATIC LOADER INCLUDING A VALVE PORT BLOCK

Charles W. Frost, Lisbon, N. Dak., assignor to Clark Equipment Company, Buchanan, Mich.

Filed Apr. 6, 1981, Ser. No. 251,438

Int. Cl.³ B60K *41/20*

U.S. Cl. 192—3 R **6 Claims**



1. A brake system for a hydrostatic loader comprising an improved arrangement of components including:

a hydrostatic drive motor having an output shaft extending from both ends of the motor;

a multi-function valve port block fixedly mounted on one end of the motor, the output shaft of the motor passing therethrough;

brake means mounted on the output shaft of the motor adjacent the valve port block; and

drive means mounted on the end of the output shaft opposite the valve port block and the brake means, said drive means engageable with a drive mechanism.

4,417,650

SAFETY CLUTCH

Hubert Geisthoff, Lohmar, Fed. Rep. of Germany, assignor to Jean Walterscheid GmbH, Lohmar, Fed. Rep. of Germany

Filed Mar. 31, 1981, Ser. No. 249,486

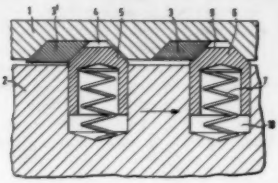
Claims priority, application Fed. Rep. of Germany, Apr. 2, 1980, 3012783

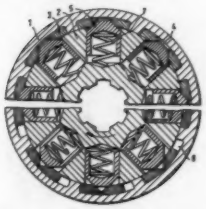
Int. Cl.³ F16D *43/20*

U.S. Cl. 192—56 R **7 Claims**

1. A clutch for machine drives particularly suitable for agricultural implements comprising a clutch hub, a clutch sleeve, tapered recesses in said clutch sleeve, and spring loaded dog members having wedged engagement heads with a flattened face for engagement in said recesses for transmitting torque between said hub and said sleeve, said recesses having a circumferential dimension larger than the circumferential dimension of said wedged engagement heads of said dog members such that when said dog members are in torque transmitting position within said recesses, a remaining space is provided which is occupied by movable control strips and such that

when said dog members are not engaged in torque transmitting position within said recesses the distance of movement of said





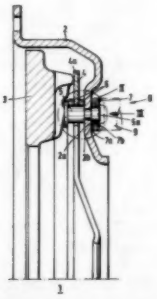
control strips in the circumferential direction is equal to or smaller than the head width of said flattened face.

4,417,651

BALANCED FRICTION CLUTCH SYSTEM AND METHOD OF MAKING SAME

Phong Lu, Wooster, Ohio, assignor to Luk Lamellen und Kupplungsbau GmbH, Bühl, Fed. Rep. of Germany

Filed May 6, 1981, Ser. No. 260,975
Int. Cl.³ F16D *19/00, 25/00*; B21D *39/00*; B23P *11/00*
U.S. Cl. 192—89 B **6 Claims**



1. Method of balancing a friction clutch which comprises slipping a centrally recessed slug-like balancing weight of metal, wherein the central recess is bounded by a collar-like shoulder projecting in direction toward a friction clutch disposed opposite further regions of the balancing weight, onto a rivet head of the friction clutch so that the projecting shoulder makes contact with regions of the friction clutch adjacent to the rivet head, and shifting the balancing weight farther in direction toward the friction clutch so as to force the collar-like shoulder in radial direction of the central recess onto the rivet head and clamp it to the rivet head by reducing the diameter of the central recess.

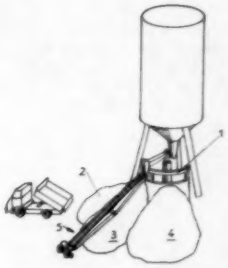
3. A balanced friction clutch system, said system including a friction clutch having a portion projecting therefrom; and a slug-like metal balancing weight having a central recess which is slipped over the projecting portion of said clutch, said weight including a collar-like shoulder surrounding the central recess and extending from the weight in a direction in which the weight is to be slipped over the projecting portion of the clutch, said shoulder being engageable with contact regions of the clutch adjacent the projecting portion thereof after the weight has been slipped over the projecting portion of the clutch, a region of said weight initially set back from said shoulder thereof being bringable over the travel path of said weight relative to the clutch and into contact with further contact regions of the clutch and, during mutual travel of said weight and said clutch, regions of the collar of said weight being shifted radially inwardly so as to force the shoulder in the radial direction of the central recess onto the projecting portion and clamp it onto the projecting portion by reducing the diameter of the central recess.

4,417,652

SCRAPER ARM

Gaston Grandmenil, 61 Rue de la Liberation, Le Mans, Sarthe, France

Filed May 12, 1980, Ser. No. 136,106
Claims priority, application France, Mar. 29, 1979, 79 08577
Int. Cl.³ B65G *65/06*
U.S. Cl. 198—511 **6 Claims**



1. A scraper arm apparatus for transporting aggregate material to a container having a vertical longitudinal axis and at least a partial cylindrical wall extending vertically above the ground level from the ground adjacent to said container, said apparatus comprising:

a first support member rotatably connected within said container, said first support member extending upwardly approximately along said longitudinal axis of said container and rotatable thereabout;

a second elongated support member pivotally fastened to said first support member so as to be selectively pivotable about an axis perpendicular to said longitudinal axis, said second support member having one end and an opposite end, said one end of said support member being disposed above said wall of said container and further extending vertically downwardly and horizontally away from said wall of said container to the ground level, said opposite end being positioned at a lower level than said one end and adjacent to the aggregate material on the ground level;

a predetermined path around the periphery of said second elongated support member extending from said one end, around said opposite end and back to said one end to form a continuous circuit around said second elongated support member;

an endless chain slidably mounted to said periphery of said second elongated support member;

a plurality of spaced apart scraper members oriented to travel along said predetermined path around said periphery of said second elongated support member;

means for driving said endless chain around said predetermined path and for effecting the lateral movements of said

plurality of spaced apart scraper members around said periphery of said second elongated support member to engage the aggregate material on the ground level and to transport the aggregate material to the top of said wall of said container;

means for vertically elevating at least one of said one and said opposite ends of said second elongated support member from the ground level so as to render said scraper plurality of spaced apart members incapable of engaging the aggregate material on the ground level, said elevating means comprising:

at least one winch rotatably interconnected with said first support member;

a drum for said winch having a cable winding surface thereabout;

a pulley mounted to said first support member at a location above said wall; and

a cable having a first end and a second end, said first end of said cable being wound around said cable winding surface of said drum and said second end of said cable being directed upwardly from said drum to pass over said pulley and being attached to said one end of said second elongated support member such that, upon selective operation of said winch, said cable lowers and raises said one end of said second elongated support member.

4,417,653

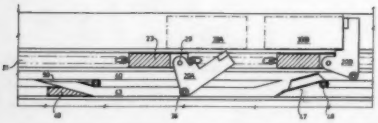
CONVEYOR

Johannes C. W. Zwezerynen, Auckland, New Zealand, assignor to Alco Manufacturing Co. Limited, Auckland, New Zealand

Filed May 26, 1981, Ser. No. 267,293

Int. Cl.³ B65G *19/00*

U.S. Cl. 198—718 **6 Claims**



1. A conveyor including a conveying surface along which articles can be conveyed; a plurality of spaced retractable pushers capable of moving along a path substantially parallel to said conveyor surface, each said pusher being provided with guide means; means for moving the pushers along said conveyor path, a plurality of guide tracks capable of guiding said guide means; a plurality of spaced means for switching said guide means between said guide tracks to control the extension or retraction of each pusher relative to the conveyor surface, the pushers being spaced greater than the spacing of the switch means to enable articles to be stacked on said conveyor surface in an out-of-phase relationship with said pushers, whereby during start up the pushers sequentially engage a plurality of stationary articles one by one.

4,417,654

TENSIONING DEVICE FOR A VERTICAL CONVEYOR

Heinz Lauhoff, Beckum, and Alfons Bökamp, Oelde-Stromberg, both of Fed. Rep. of Germany, assignors to Bernhard Beumer Maschinenfabrik KG, Beckum, Fed. Rep. of Germany

Filed May 11, 1981, Ser. No. 262,476

Claims priority, application Fed. Rep. of Germany, May 10, 1980, 3017969

Int. Cl.³ B65G *23/44*

U.S. Cl. 198—815 **13 Claims**

1. A vertical conveyor comprising

(a) a driving drum;

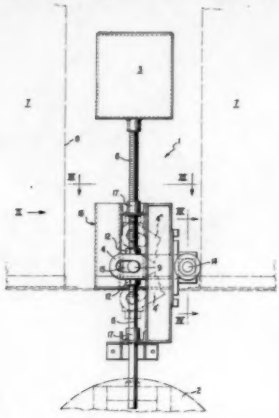
(b) power means for rotating said driving drum;

(c) a tensioning drum spaced vertically from said driving drum and supported shiftably for varying its distance from said driving drum; said tensioning drum being supported for rotation on a tensioning drum shaft having an axis;

(d) a vertically oriented endless carrier trained about said driving drum and said tensioning drum;

(e) a tensioning weight situated spaced from and in vertical alignment with said tensioning drum;

(f) coupling elements situated between and in vertical alignment with said tensioning weight and said tensioning drum; said coupling elements being secured to said tensioning weight and to said tensioning drum for directly transmitting forces from said tensioning weight to said



tensioning drum urging said tensioning drum vertically away from said driving drum, whereby said endless carrier is tensioned;

(g) a support frame situated between said tensioning weight and said tensioning drum and supporting said coupling elements;

(h) a support shaft horizontally spaced from said coupling elements; and

(i) levers mounted on said support shaft and connected to said coupling elements for operatively connecting said support shaft with said coupling elements for equalizing misalignments of said tensioning drum shaft.

4,417,655

SHIPPING AND DISPLAY CARTON

Hampton E. Forbes, Jr., Wilmington, Del., assignor to Westvaco Corporation, New York, N.Y.

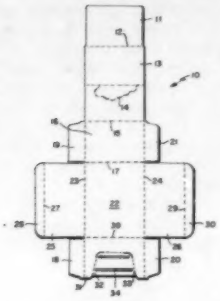
Filed Aug. 13, 1982, Ser. No. 408,002

Int. Cl.³ B65D *5/52*

U.S. Cl. 206—45.25 **2 Claims**

1. A shipper/display carton prepared from an elongated blank of foldable sheet material comprising, in order, front, bottom, rear and top panels foldably connected together, said top panel including an integral display riser section cut from a portion of the top panel which normally lies in the plane of the top panel, a front closure flap foldably attached to said top panel and tucked behind and adhered to the inside of said front panel, minor flaps foldably attached to the side edges of said front and rear panels, a pair of side closure panels including tuck flaps foldably attached to the side edges of said bottom panel and adhered to said minor flaps, a detachable cut out portion in said front panel formed by an arcuate release line that extends from an upper edge of said front panel downwardly and across said front panel and then upwardly back to the upper edge of said front panel, means adhering the front closure flap to the inside surface of said detachable cut out to form the manufacturers joint for said carton in its shipper configuration, and means for opening said carton for its display

configuration wherein the detachable cut out portion of said front panel is separated from the front wall and said front closure flap with the detachable cut out attached is folded



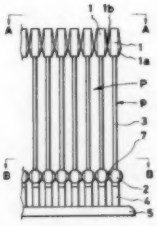
adjacent to the rear panel to open the carton and automatically elevate the display riser section of said top panel into its display condition.

4,417,656

CLUSTER TYPE TAG PIN ASSEMBLY

Masami Kato, Nagoya, Japan, assignor to Toska Co., Ltd., Tokyo, Japan

Filed Apr. 16, 1981, Ser. No. 254,755
Claims priority, application Japan, Sep. 11, 1980, 55-125275
Int. Cl.³ A44B *9/00*; B65D *85/24*; G09F *3/12*
U.S. Cl. 206—346 **10 Claims**



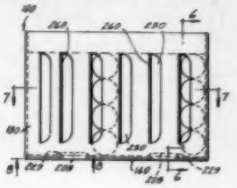
1. A cluster type tag-pin assembly comprising a plurality of tag pins, each said tag pin having a head portion, a cross bar and a filament portion which joins said head portion to said cross bar, each said cross bar including a connecting neck which extends therefrom in a direction opposite to said filament portion, said tag pins being connected through their respective connecting necks to a connecting bar at substantially right angles to said connecting neck to form an assembly of joined tag pins, said assembly of tag pins being integrally formed from a synthetic resin into a comb-like assembly as a whole, each said cross bar having opposing expanded portions defining apeces formed on opposite central parts of each side face thereof, adjacent expanded portions of said cross bars being connected to each other through said apeces of their respective expanded portions whereby all cross bars in the tag pin assembly are arranged in a sheet-like form, said expanded portions being separated when a shearing force is applied thereto, adjacent head portions of said tag pins being spaced with a gap smaller than the thickness of the head portion.

4,417,657

BEVERAGE CAN CONTAINER

David T. Thibodeau, 126 Stephens Rd., Grosse Pointe Farms, Mich. 48236

Filed Nov. 27, 1981, Ser. No. 325,300
Int. Cl.³ B65D *71/00*
U.S. Cl. 206—427 **1 Claim**



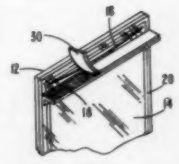
1. An open top container for beverage cans and the like of predetermined length and diameter, said container being formed from a single sheet folded to provide an elongated bottom wall, end walls extending upwardly from opposite ends of said bottom wall at right angles thereto, side walls extending upwardly from opposite sides of said bottom wall at right angles thereto, said side walls being spaced apart a distance approximating the length of a beverage can, and a plurality of dividers extending vertically from a point adjacent said bottom wall to a point adjacent the top of said container, said dividers being spaced from one another and from said end walls a distance approximating the diameter of a beverage can to provide chambers each adapted to support a stack of beverage cans introduced through the open top of said container, each divider comprising a pair of flaps extending toward one another from the two side walls in opposed, laterally spaced relation, one flap of each pair being cut from one side wall and the other being cut from the other side wall, each flap extending continuously between said points adjacent said bottom wall and top of said container, said flaps being joined to said side walls by lines of weakness and folded inward at substantially right angles to said side walls leaving openings in the side walls to expose the contents of the container, whereby when a can is inserted into each chamber and rests upon the bottom wall of said container, said flaps will be retained in their inwardly folded positions by such inserted cans thereby facilitating the insertion of additional cans in stacked relation in each of said chambers.

4,417,658

SELF-SEALING STERILIZATION BAG

Donald E. Gardner, East Islip, N.Y., and David T. Smith, Montville, N.J., assignors to Surgicot, Inc., Smithtown, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,127
Int. Cl.³ B65D *33/20*
U.S. Cl. 206—438 **4 Claims**



1. A sterilizable pouch comprising a plastic web and a paper web marginally heat sealed around all sides thereof, a slit in one of said webs for receiving the package contents and an adhesive strip adhered to the web; said adhesive strip being positioned to cover and seal both lips of the slit, and along with

the web to which it is attached forming an assembly which acts as means for opening the slit for insertion of an article.

4,417,659

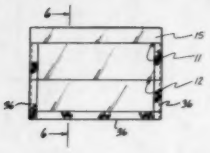
X-RAY FILM AND MEDICAL RECORD ORGANIZER

J. W. Hatchell, P.O. Box 90684, Nashville, Tenn. 37209

Filed Apr. 6, 1981, Ser. No. 250,924

Int. Cl.³ B65D *27/04, 27/06, 27/08, 85/30*

U.S. Cl. 206—455 **1 Claim**



1. An improved medical records organizer comprising the combination of:

a generally rectangular opaque back portion;

a first generally rectangular sheet of transparent vinyl material substantially superimposed over at least three adjoining edges of said back portion and bonded thereto along said three adjoining edges to form a first envelope portion having bonded sides and bottom and an open top;

a second generally rectangular sheet of transparent vinyl material substantially superimposed over said first transparent sheet and bonded thereto along said three adjoining bonded edges to form a second envelope portion having bonded sides and bottom and an open top;

reinforcing strips of nylon mesh impregnated flexible vinyl material wrapped around said three bonded edges and adhesively secured to said back portion and to said first and second transparent sheet; and

seams sewn along the two of said bonded edges forming the sides of said envelope portions and stitched through said back portion, said first and second transparent sheets, and said reinforcing strips along said bonded sides, whereby tearing and separation of said envelope portions at the sides thereof is prevented.

4,417,660

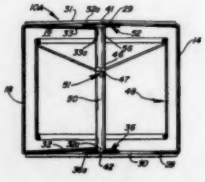
CARTON FOR PACKAGING LAMP SHADES OR THE LIKE

James J. Mason, Olympia Fields, Ill., assignor to Cameo Container Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 299,859, Sep. 8, 1981. This application Mar. 17, 1982, Ser. No. 359,103

Int. Cl.³ B65D *85/62*

U.S. Cl. 206—500 **17 Claims**



1. A shipping carton formed from an integral blank of foldable paperboard material comprising, a plurality of sidewall panels hingedly connected together, one of said sidewall panels having a hinged manufacturer's joint extending therefrom for securement to another sidewall panel to form a rectangular enclosure, said sidewall panels having opposite edges along which a respective end flap member is hingedly secured, the pair of end flap members hingedly secured to one of said sidewall panels having integral anchoring flap means hingedly connected along a hinge line parallel to and spaced from the hinge line connection of the end flap to the sidewall panel, said anchoring flap means including apertures therethrough aligned along a vertical axis on the interior of the carton when the end flaps are inwardly folded to form the respective top and bottom walls of the carton, wherein said anchoring flap means are positioned in generally back-to-back configuration with said end flaps to which they are respectively connected and a portion of each of said anchoring flap means generally overlaps a respective opposing one of said end flaps, at least one of said opposing end flaps includes a clearance passageway therethrough, said passageway being generally aligned with the aperture in said respective anchoring flap means, said anchoring flap means being located to engage protuberances of a packaged product for preventing shifting of the product during shipment of the carton.

4,417,661

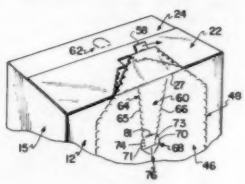
RECLOSABLE CARTON AND BLANK THEREFOR

Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Jul. 5, 1979, Ser. No. 54,867

Int. Cl.³ B65D *5/54*

U.S. Cl. 206—625 **2 Claims**



1. A unitary blank for a carton formed of paperboard comprising:

(a) a front panel, a rear panel, and two side panels connected along generally parallel fold lines;

(b) a top closure flap hingedly extending along a fold line from the top of each of said front, rear, and two side panels;

(c) a bottom closure flap hingedly extending along a fold line from the bottom of each of said front, rear, and two side panels;

(d) an interior flap area in at least one of said panels and closure flaps defined by the intersection of a first perforated line and a first interior fold line;

(e) a tab area located in said interior flap and defined by the intersection of a second perforated line and a second interior fold line, said second perforated line defining an enlarged distal end on said tab area, said tab folding about said second interior fold line such that said tab and said interior flap fold in opposite directions; and

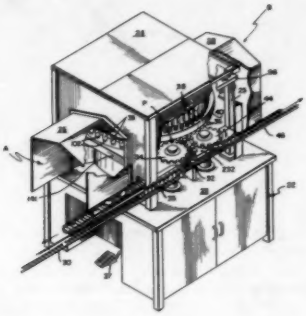
(f) a slot area located outside said interior flap area and defined by the intersection of a third perforated line and a third interior fold line, said slot area receiving said folded tab and having a width less than the width of said enlarged distal end whereby said flap is interlocked to said body thereby securely reclosing said body.

4,417,662

VIAL INSPECTION MACHINE

David W. Nicholson, Indianapolis; Larry G. Smith, Plainfield; Harold B. Dinius, Mooresville, and Ronald R. Oberle, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed May 4, 1981, Ser. No. 260,003
Int. Cl.³ B07C 5/02
U.S. Cl. 209—522 57 Claims



1. Apparatus for inspecting objects, such as medicinal vials and the like, having surfaces at their ends by which the objects may be gripped to expose their sides and opposite ends, comprising

a series of chucks for gripping such objects at their said surfaces to carry them for inspection, and means to move such chucks to carry the objects along an inspection path in a continuously moving, closely spaced sequence across an inspection station at which a substantial number of objects are simultaneously exposed for inspection,

means for feeding objects to said chucks ahead of said inspection station,

means for illuminating each object with an individual beam of light directed toward the object and moving with the object as it traverses said inspection station,

the number of continuously moving objects simultaneously exposed for inspection at said inspection station being sufficient to permit comparative or pattern inspection thereof during their travel across the inspection station.

4,417,663

APPARATUS FOR DETERMINING THE SEX OF A CHICK

Kiyonobu Suzuki, 5 Weaver Dr., Salisbury, Md. 21801

Filed Jun. 16, 1981, Ser. No. 274,227
Int. Cl.³ B07C 5/342
U.S. Cl. 209—587 6 Claims

1. A means for determining the sex of a chick comprising:

means for sensing certain characteristics of a chick and producing output values corresponding to each of the sensed characteristics, said means for sensing certain characteristics of a chick comprises:

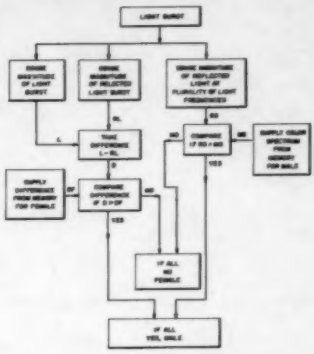
a means for generating a burst of light;

a means for applying the burst of light to an anal region of the chick;

a means for sensing the magnitude of said burst of light; and

a means for sensing the magnitude of the light reflected from said anal region of said chick;

means for comparing said output values with preset characteristic values and for producing affirmative signals whenever each of said output values correspond to said preset characteristic values; and



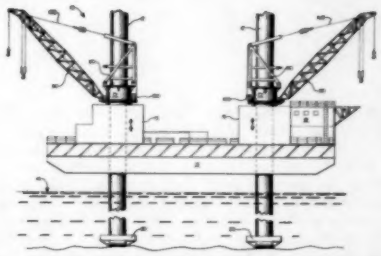
a means for indicating the sex of said chick in response to said affirmative values.

4,417,664

METHOD AND APPARATUS FOR MOUNTING LIFT CRANE ON OFFSHORE STRUCTURES

John C. Gordon, Jefferson, La., assignor to Nautilus Crane & Equipment Corporation, Reserve, La.

Filed Jul. 31, 1981, Ser. No. 288,978
Int. Cl.³ B66C 23/52
U.S. Cl. 212—192 15 Claims



15. A lift crane support assembly for use on jackup rigs having a barge platform supported by a plurality of telescoping, vertically movable legs, each operated by an associated jacking structure secured to the barge platform, comprising:

a. a hollow base positioned upon and anchored to one of the jacking structures, and surrounding one of the legs so that the surrounded leg can freely pass therethrough;

b. a crane superstructure attached to the base, the crane superstructure unencumbering vertical movement of the leg.

4,417,665

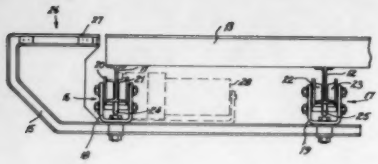
MEANS FOR MOUNTING A CRANE ON A LOAD CARRYING PLATFORM

Joseph B. Adeline, 6 Hurlston Way, Koondoola, Australia

Filed Aug. 3, 1981, Ser. No. 289,412
Claims priority, application Australia, Oct. 30, 1980, 6387 3/80
Int. Cl.³ B66C 7/02
U.S. Cl. 212—224 6 Claims

1. Means for mounting a crane on a load carrying platform comprising guide means mounted on the underside of the platform and extending at least the full length of one side of the platform, a carriage having a first portion mounted on said guide means for movement therealong and beneath said plat-

form and having a cantilevered portion projecting beyond the adjacent edge of the platform, and a crane mounted on said



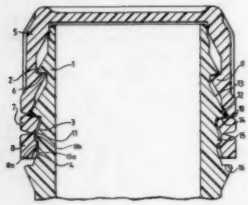
cantilevered projecting portion and extending upwardly beyond the load carrying platform.

4,417,666

CONTAINER AND CLOSURE HAVING TAMPER-PROOF FEATURE

Derek C. Roberts, London, England, assignor to Johnsen & Jorgensen (Plastics) Limited, London, England

Filed Feb. 22, 1982, Ser. No. 350,581
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—256 **5 Claims**



1. A container and closure assembly wherein the closure comprises a cap part with an internal discontinuous multi-start screw thread, a tear-away tamper-evident band connected to the cap part by a first line of weakness, a captive band connected to the tamper-evident band by a second line of weakness and internal annular projecting bead means on the captive band and wherein the container has a neck defining an open mouth, a discontinuous multi-start external screw thread around the mouth, an external annular nose-shaped bead below the screw thread and with an inclined upper surface and a substantially horizontal lower surface, an annular recess around the neck of the container for engagement by said projecting bead means on the captive band and annular ledge means disposed around the neck of the container below said annular recess suitably adapted and disposed to receive said captive band after said tamper-evident band has been torn away from said assembly.

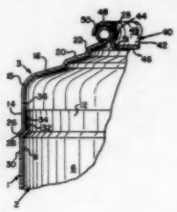
4,417,667

LIGHTWEIGHT CONTAINER

Donald J. Roth, Westport; Charles S. Kubis, Weston, both of Conn., and John Walter, Evergreen Park, Ill., assignors to The Continental Group, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 191,225, Sep. 26, 1980, and Ser. No. 191,226, Sep. 26, 1980. This application Sep. 25, 1981, Ser. No. 305,668
Int. Cl.³ B65D *8/08, 8/22*
U.S. Cl. 220—67 **23 Claims**

1. A metal can comprising a body, a dome, and a lapped joint including an adhesive layer between said body and said dome, and the relationship between said body and said dome being one wherein when said can is filled with a liquid packaged under pressure said dome in the general area of said lapped joint radially inwardly deforms and said body in the general area of said lapped joint radially outwardly deforms with the combined deformation of said dome and said body compressing said adhesive layer, said relationship between said dome and said body including said dome having a lower cylindrical lip, said lip merging at its upper edge into a toroidal curve which merges into a conical radially inner and axially upper portion, said body having an axially upper portion telescoped



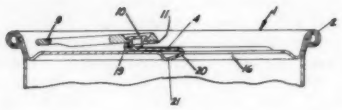
within said lip with an axially upper free edge of said body terminating within said lip adjacent said toroidal curve, and wherein under internal pressure said conical portion is deformed generally axially upward and said toroidal curve is deformed radially inward with an associated tilting of said lip including a radially inward deformation of at least an axially upper portion of said lip and compression of an upper part of said adhesive layer.

4,417,668

EASY OPEN CAN END WITH PULL TAB HAVING RETAINED TEAR STRIP WITH STRESS RELIEF MEANS

Ralph J. Stolle, Lebanon, Ohio, assignor to Stolle Research and Development Corporation, Cincinnati, Ohio

Continuation-in-part of Ser. No. 298,924, Sep. 3, 1981, abandoned. This application Nov. 23, 1981, Ser. No. 323,749
Int. Cl.³ B65D *17/34*
U.S. Cl. 220—269 **19 Claims**



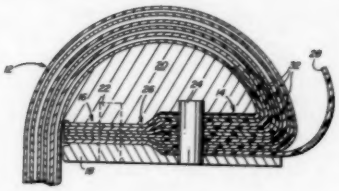
1. In a can end having a retained tear strip extending radially from approximately the center of the can end to near the can end rim, said tear strip being defined by a score line of keyhole shape having a rounded portion adjacent the can end rim, and a relatively narrow portion defined by two portions of the score line terminating in spaced relation to each other so as to make said tear strip captive when torn open, said score line becoming shallower as it approaches the end of said portions, and disappearing entirely at the said ends, a pull tab secured to said tear strip by means of a rivet or the like adjacent the rounded end thereof within said score line, and having a nose to initiate a tear along said score line upon lifting of said pull tab, said pull tab, when raised, causing said tear strip to bend downwardly along a transverse line behind said rivet, initiating a tear in said score line and forming a first bend in said tear strip, said pull tab, when retracted, completing the opening of the end and forming a reverse bend in said tear strip adjacent said end, and said pull tab, if desired, when depressed against the top of said can end, causing said first bend to be flattened, and causing said second bend to form a third bend extending below the surface of the can end and having a radius of curvature greater than that of said second bend, said third bend providing a relief for said second bend to prevent breaking of said tear strip when flexed.

4,417,669

MULTIPLE BAG DISPENSER

Henry L. Knowles, 1030 E. Bethany Home Rd., Phoenix, Ariz. 85014, and James P. Winningham, 3043 N. 36th St., Apt. #1, Phoenix, Ariz. 85018

Filed Nov. 30, 1981, Ser. No. 325,986
Int. Cl.³ B65H 3/58
U.S. Cl. 221—26 **19 Claims**



1. A multiple bag dispenser comprising:

a. a plurality of nested bags sequentially positioned one inside another and having an exposed inner bag, each of said bags including

i. a detachable lip;

ii. a bag body having a mouth coupled to said lip;

b. a retaining ring assembly including an upper ring and a lower ring for gripping the lips of said nested bags and for maintaining an opening at the mouth of each of said nested bags; and

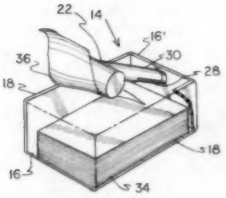
c. a tearing pin extending between said upper ring and said lower ring and passing through an aperture in the mouth of each bag for separating the lip of an exposed bag from the body of said bag to permit removal of said exposed bag from said retaining ring assembly.

4,417,670

DEVICE FOR DISPENSING TISSUE PAPER AND SHEET MATERIAL

Homer L. Booher, 5114 Island Date, Sarasota, Fla. 33579

Filed Jan. 12, 1981, Ser. No. 224,653
Int. Cl.³ B65G 59/02
U.S. Cl. 221—210 **3 Claims**



1. A device for simultaneously dispensing two sheets of paper or similar sheet material, comprising:

(a) an essentially rectangular container for two identical stacks of tissue paper or similar sheet material, said container having a pair of ends, a pair of sides, a bottom, and a separate compartment for each of said identical stacks of tissue paper or similar sheet material;

(b) a pick-up head having a rigid shaft connected thereto, said pick-up head being configured for simultaneously contacting the top sheet of each of said identical stacks of tissue paper or similar sheet material when pressed downward by the user of the device;

(c) a coil spring having one of its ends fitted over the free end of said rigid shaft and the other of its ends rigidly connected at a positive angle to a top center location on one of said ends of said container; and

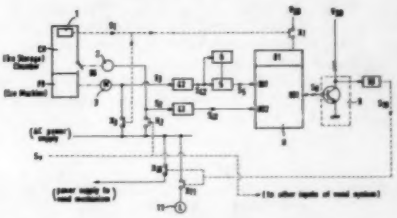
(d) a non-drying, pressure sensitive, tacky adhesive secured to said pick-up head for simultaneously contacting the top sheet of each of said identical stacks of tissue paper or similar sheet material when said pick-up head is pressed downward by the user of the device and for retaining the top sheet of each of said identical stacks of tissue paper or similar sheet material when said pick-up head is released by the user of the device.

4,417,671

AUTOMATIC VENDING MACHINE WITH ICE PREPARATION

Kikuo Kawasaki, Yokohama; Kazuo Yoshida, Hachiooji; Nobuo Nonoyama; Toshibumi Yamaguchi, both of Yokkaichi; Toshio Hasegawa, Suzuka, and Jitsuo Okamura, Yokkaichi, all of Japan, assignors to Fuji Electric Co., Ltd., Kawasaki, Japan

Filed Oct. 15, 1981, Ser. No. 311,759
Int. Cl.³ B67D 5/14
U.S. Cl. 222—56 **3 Claims**



1. In an automatic vendor having an ice machine with a storage chamber in which the produced ice is stored and from which the ice is supplied during vending, and which is provided with a sensor producing a signal when the ice quantity in the chamber reaches a predetermined full storage level, the improvement comprising:

means for producing digital signals representative of quantities of ice makeup to and ice discharge from the storage chamber;

counting means for receiving said digital signals and for storing a count value indicative of the quantity of ice in said storage chamber, and for producing an output signal when its count value is not less than a predetermined minimum value, and for producing an auxiliary output signal when the count value is at least a predetermined intermediate value less than the full count;

a vend control responsive to the counting means output signal, to deactivate the vending operation of the vendor in response to cessation of said counting means output signal; and

means responsive to said auxiliary output signal for starting operation of said ice machine to make ice upon interruption of said auxiliary output signal.

4,417,672

DISPENSER FOR FLOWABLE MATERIAL

Lawrence C. Eppenbach, 419 Kennedy St., Juneau, Ak. 99801

Filed Dec. 7, 1981, Ser. No. 327,942
Int. Cl.³ B67B 7/26
U.S. Cl. 222—81 **14 Claims**

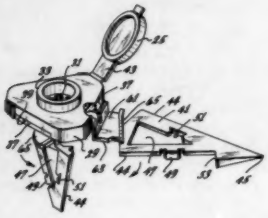
1. A dispenser for penetrating a container and dispensing a flowable material from the container, said dispenser comprising:

a penetrator for puncturing a wall of the container and folding back regions of the wall to form an opening in the wall of a size to receive the penetrator, said penetrator having a puncturing end portion configured to facilitate

puncturing of the wall of the container and an inner end portion remote from the puncturing end portion;

a cap sized to cover the opening formed by the penetrator;

connecting means for attaching the penetrator to the cap whereby the cap can be on the exterior of the wall of the container when the penetrator is within the container and the connecting means can project through the opening in the wall of the container to join the penetrator to the cap;



said penetrator including a plurality of sections hinged to said cap and means for joining said sections together;

means for engaging the wall of the container to hold the cap against the exterior of the wall of the container; and

passage means at least partially in said cap for providing communication between the interior of the container and the exterior of the dispenser when the dispenser is in position on the container.

4,417,673

SPRAY DISPENSER FOR A CONTAINER OF A FLUID UNDER PRESSURE

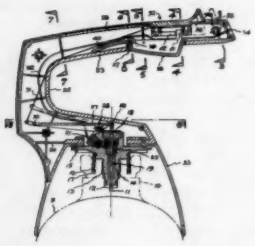
Warren J. Hancock, Clayton, Australia, assignor to The Commonwealth Industrial Gases Limited, Surry Hill, Australia

Filed Aug. 5, 1981, Ser. No. 290,235

Claims priority, application Australia, Aug. 13, 1980, PE5007

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—153 **7 Claims**



1. A sprayable-fluid dispenser for a container of the kind having a body having a contents discharge neckpiece fitted with a normally-closed depressible-stem discharge valve; comprising:

(a) a skirt adapted for removable attachment to the container neckpiece;

(b) a handpiece comprising:

(1) a neck portion extending vertically above said skirt and having its lower end contiguous with said skirt; and

(2) a grip portion contiguous with said upper end of said neck portion and spaced above and extending transversely across said skirt;

(c) an operating trigger on said handpiece, movable between an "off" position and an "on" position;

(d) a fluids issue nozzle on said handpiece;

(e) mechanism within said handpiece and said skirt whereby placement of said trigger in its on position causes depression of said stem thereby to put said nozzle in communication with the interior of said body;

(f) interlock means on said handpiece having a locked position in which movement of said trigger from its off position is obstructed, and an unlocked position in which such movement is unobstructed;

(g) first spring-loading means which influence said trigger to remain in its off position; and

(h) second spring-loading means which influence said interlock means to remain in locked position.

4,417,674

VALVE FOR THE ADMIXTURE OF FLUIDS AND DELIVERY OF THE RESULTING MIXTURE

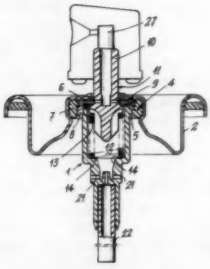
Giancarlo Giuffredi, Milan, Italy, assignor to Coster Tecnologie Speciali S.p.A., Milan, Italy

Filed Apr. 2, 1979, Ser. No. 26,001

Claims priority, application Italy, Apr. 13, 1978, 22268 A/78

Int. Cl.³ B65D *83/14*

U.S. Cl. 222—402.18 **5 Claims**



1. A valve for admixture, during dispensing of a liquid stored under gas pressure with a controlled portion of the pressurizing gas, said valve being of the type including: a hollow body with upper and lower ends, said lower end being connected to a suction tube, said valve having integral gasketed sealing means at the upper end, said body having at least one transverse hole for gas transport, said valve also including a valve plunger movable within the body and resilient bias means between the valve plunger and the body, the valve having a hollow stem for dispensing the mixture, said valve further comprising:

a nozzle formed integrally with the body, said nozzle being located at said lower end of the body and connected to the suction tube; and

a passageway within the body, said passageway having an annular portion surrounding said nozzle and a portion extending beyond the nozzle, the cross-sectional area of said passageway being greater in said extended portion beyond the nozzle than the cross-sectional area in the annular portion of said passageway surrounding said nozzle, the annular portion of said passageway communicating with the transverse gas transport holes, said nozzle, said passageway, and said transverse holes forming a venturi-effect ejector whereby liquid flowing through the nozzle entrains gas flowing through said transverse holes, with mixing of the gas and the liquid during expansion in the extended portion of the passageway.

4,417,675

MELTING AND APPLICATION DEVICE FOR MELTING ADHESIVES

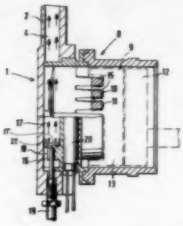
Anton Abt, Oberboihingen; Alfred Dettelbach, Stuttgart, and Gerhard Gresser, Oberboihingen, all of Fed. Rep. of Germany, assignors to Reich Spezialmaschinen GmbH, Nuertingen, Fed. Rep. of Germany

Filed Feb. 23, 1981, Ser. No. 236,678

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1980, 3008779

Int. Cl.³ B67D 5/62; F27B 14/00

U.S. Cl. 222—146 HE 7 Claims



1. An apparatus for melting and applying meltable adhesives, comprising an application device (1) for delivering melted adhesive to a work piece, melting chamber means (9) located adjacent to said application device, melting insert means (10) comprising heatable melting wall means (11) arranged for insertion between and removal from between the melting chamber means (9) and the application device (1), said heatable melting wall means (11) having channel openings (21) therethrough, and feed piston means (12) operatively located for displacement in said melting chamber means, said feed piston means being constructed and arranged for pressing meltable adhesive against the melting wall means, whereby the meltable adhesive is at least partially melted and supplied under pressure to the application device, said apparatus further comprising a storage chamber (16) for storing melting adhesive, said storage chamber being operatively arranged between the melting insert means (10) and the application device (1), said channel openings (21) connecting said storage chamber (16) through the melting wall means (11) with the melting chamber (9) for transporting melted adhesive into said storage chamber, said apparatus further comprising adhesive supply channel means (4) formed between the storage chamber (16) and the application device (1), said supply channel means (4) comprising lands (17) which extend said supply channel means into the lower portion of the storage chamber, said lands (17) being slightly spaced from the lower end of the storage chamber means (16) for assuring the transfer of all adhesive in the storage chamber into the application device by avoiding a dead space in the adhesive path from said channel openings (21) to said supply channel means (4).

4,417,676

METHOD AND APPARATUS FOR PARTITIONING AND/OR SHAPING A FIBROUS BATT

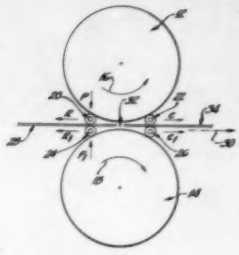
Othmar Schildknecht, and Eduardo Cassoli, both of Sao Jose dos Campos, Brazil, assignors to Johnson & Johnson Baby Products Company, New Brunswick, N.J.

Filed Feb. 11, 1981, Ser. No. 233,421

Int. Cl.³ B26F 3/02

U.S. Cl. 225—4 1 Claim

1. Method for partitioning a continuous batt of loosely compacted fibers into a plurality of individual panels, characterized by comprising: conveying the batt at a constant displacement speed in a certain direction; gripping the batt with two pairs of opposing resilient means arranged transversely relative to the direction of motion of the batt, and at a predetermined distance one pair from the other, said pairs of opposing resilient means consisting of a pair of trailing resilient means and a pair of leading resilient means; momentarily delaying the movement of the batt by an elastic reaction from the pair of trailing resilient means; momentarily advancing the batt, simultaneously to



the momentary delay, by an elastic reaction of the pair of leading resilient means so as to stress the fibrous batt and sever it without the formation of compaction lines on the edges thus formed and without leaving the general plane of travel.

4,417,677

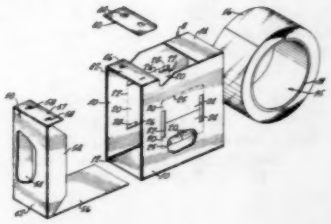
TAPE DISPENSER

Gary G. Mead, 12791 Barrett La., Santa Ana, Calif. 92705

Filed Oct. 5, 1981, Ser. No. 308,921

Int. Cl.³ B26D 1/02; B65D 85/672

U.S. Cl. 225—26 21 Claims



1. A dispenser for storing a roll of pressure-sensitive adhesive tape, dispensing a segment of tape from said roll, and severing said segment therefrom comprising:

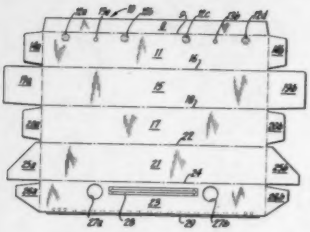
a receptacle sized compatibly to contain the roll of tape, said receptacle having an opening for withdrawing tape therethrough from said roll,

cutting means for severing a segment of the withdrawn tape, said cutting means comprising a planar member attached to the receptacle and oriented with respect to said opening so that when the cutting means is used for severing said segment the withdrawn tape is positioned with its adhesive side facing said planar member at an acute angle therewith,

said planar member lying in a plane outside the periphery of the roll of tape and having a first edge adjacent said opening and a cutting edge for severing said tape remote from said opening, and

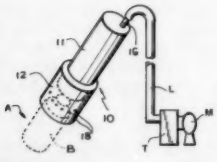
said cutting means further comprising a positioning member adjacent said first edge, said positioning member having a substantially linear upper edge running substantially parallel to said cutting edge and being at least about two tape thicknesses above said planar member.

4,417,678
CARTON OPENING DEVICE
Harry I. Roccaforte, Western Springs, Ill., assignor to Champion International Corporation, Stamford, Conn.
Filed Sep. 8, 1981, Ser. No. 299,958
Int. Cl.³ B65D *85/671*
U.S. Cl. 225—43 **10 Claims**



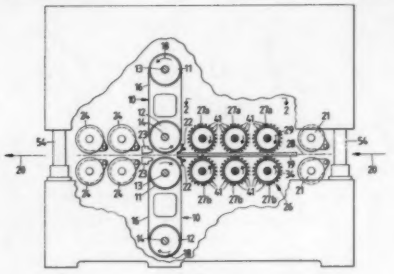
1. A paperboard carton adapted to enclose material rolled upon a spool within the carton, said carton comprising:
- a series of panels formed from a one-piece carton blank and connected along articulated lines, said panels forming front and opposite back panels, two opposed end panels, a bottom panel and a top panel hinged to the back panel;
- a hood panel connected to said top panel and lying flat against said front panel when the carton is closed;
- a cutting edge strip attached to a free edge of said hood panel and projecting beyond said free edge so that the material may be torn against the cutting edge strip after the carton is opened; and
- a plurality of adhesive areas joining the hood panel and the front panel and at least one orifice in said hood panel of sufficient size to permit finger entry and located adjacent said adhesive areas so that finger pressure through said orifice against said front panel will break the jointure of said adhesive areas and separate the hood panel from the front panel.

4,417,679
AMPULE OPENER
Walter Shields, 181-41 Henley Rd., Jamaica, N.Y. 11432
Filed Oct. 30, 1981, Ser. No. 316,470
Int. Cl.³ B26F *3/00*; C03B *33/06*
U.S. Cl. 225—93 **16 Claims**



1. An ampule opener for an ampule having a head and a body, the ampule opener being adapted to prevent contamination of material in the ampule by particles formed in snap-opening the ampule, comprising
- a holder for the ampule head having a cylindrical opening at one end, a hole extending inwardly from the cylindrical opening for receiving therein at least a part of the head of the ampule, and an outlet communicating with the hole, said outlet being adapted to be connected to a vacuum source to inspire air through said opening, and
- an annular flexible jacket situated around the end of the head holder to extend outwardly therefrom, said flexible jacket having an inner diameter almost the same as the outer diameter of the body of the ampule to be opened, so that when the ampule is positioned so that the head and the body are respectively located in the hole and the flexible jacket and then the body of the ampule is bent together with the flexible jacket to snap the head from the ampule, the particles formed by the snapping off of the ampule will be inspired into the vacuum source, thereby not contaminating the material in the ampule.

4,417,680
LUMBER FEEDER
Donnell H. Culley, Jr., P.O. Box 118, Whitesburg, Tenn. 37891
Filed Dec. 17, 1981, Ser. No. 331,539
Int. Cl.³ B65H *17/22*; G03B *1/24*
U.S. Cl. 226—181 **7 Claims**



1. In apparatus for feeding pieces of lumber of various thicknesses arranged in side-by-side relationship to each other along a path with the center lines of said pieces extending substantially on a preselected datum plane in the direction of said path, the improvement comprising,
- (a) a plurality of spaced apart, upper transverse members mounted for rotation about horizontal axes above said datum plane with the lower sides of said upper transverse members traveling in the direction of said path,
- (b) a plurality of spaced apart, lower transverse members mounted for rotation about horizontal axes below said datum plane with the upper sides of said lower transverse members traveling in the direction of said path,
- (c) drive means operatively connected to said upper and lower transverse members for imparting rotation thereto at substantially the same speed,
- (d) each of said transverse members comprising a plurality of rollers mounted non-rotatably on a horizontal shaft and in axial alignment with each other with each roller having a hub mounted on said horizontal shaft,
- (e) a radially extending, annular member carried by said hub,
- (f) a first pair of oppositely disposed, annular flanges projecting laterally and outwardly from said annular member adjacent the outer circumference thereof with there being radially extending openings in said first pair of annular flanges,
- (g) a second pair of oppositely disposed annular flanges projecting laterally and outwardly from said annular member adjacent the inner circumference thereof with there being radially extending openings in said second pair of annular flanges and in radial alignment with said radially extending openings in said first pair of annular flanges,
- (h) outwardly projecting lumber engaging pins mounted for radial movement within said radially extending openings in said first and second pair of annular flanges in position to engage opposite sides of a piece of lumber therebetween and move said piece of lumber in the direction of said path, and
- (i) spring means urging said lumber engaging pins into engagement with said opposite sides of said piece of lumber therebetween with substantially equal force and providing

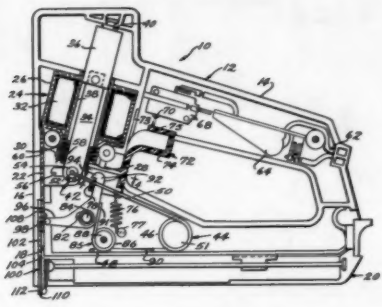
substantially equal spacing of said lumber engaging members from said datum plane.

4,417,681

ELECTRONIC TACKER

Harry F. Bernecki, Rolling Meadows; Voytech T. Skuza, Park Ridge; Kerry Dulin, Highland Park; Sri P. Sridharan, Hickory Hills; Glenn Zabec, Franklin Park, all of Ill., and James E. Edgell, Salem, Va., assignors to Textron Inc., Providence, R.I.

Filed Aug. 19, 1981, Ser. No. 294,422
Int. Cl.³ B25C *5/15*
U.S. Cl. 227—8 **17 Claims**



1. An electrically operated fastener driving device comprising

a housing structure including means defining a manually engageable handle for enabling a user to portably operate such a device, front wall means disposed in vertically extending relation forwardly and below said handle and means defining a straight vertically extending fastener drive track disposed closely adjacent said front wall means,

fastener magazine means disposed below said handle for feeding successive leading fasteners of a package of fasteners forwardly into said drive track,

a rigid fastener driving element slidably mounted in said drive track for movement through successive rectilinear reciprocating cycles of operation including a downward drive stroke during which a leading fastener fed within the drive track is engaged and moved outwardly of said drive track and an upward return stroke,

solenoid means carried by said housing structure forwardly of said handle and rearwardly and above said drive track, said solenoid means including elongated plunger means having a longitudinal axis inclined with respect to the vertical mounted for movement through successive reciprocating cycles of operation including a downward stroke along its axis and an upward return stroke,

cam means between an upper end portion of said fastener driving element and a lower end portion of said plunger means for causing a downward stroke of said plunger means in response to the energization of said solenoid means to effect a drive stroke of said fastener driving element, and

return spring means for effecting a return stroke of said fastener driving element and said plunger means in response to the deenergization of said solenoid means,

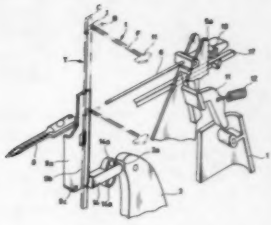
said return spring means including a central coil section disposed within said housing structure between said handle and said fastener magazine means, an operative end section extending from one end of said central coil section and connected for movement with said plunger means and a fixed end section extending from the opposite end of said central coil section and connected in operatively fixed relation with respect to said housing structure.

4,417,682

TAG ATTACHING MACHINE

Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.

Filed Oct. 21, 1981, Ser. No. 313,713
Claims priority, application Japan, Oct. 24, 1980, 55-148172
Int. Cl.³ B65C *5/06, 7/00*
U.S. Cl. 227—67 **2 Claims**



1. In a tag attaching device for receiving an assembly of tag pins removably coupled to a connecting bar and for removing said tag pins from said connecting bar for attachment to an object, the improvement comprising a guide groove formed in said tag attaching device for guiding said assembly of tag pins through said tag attaching device and cutting means disposed proximate said guide groove for selectively cutting off portions of said connecting bar as said tag pin assembly is guided through said tag attaching device, said cutting means including a cutting edge disposed adjacent said guide groove and pressing means including a pressing member for selectively pressing said connecting bar against said cutting edge to cut off portions of said connecting bar, lever means for selectively moving said pressing member to press said connecting bar against said cutting edge, said lever means including a cam portion proximate said pressing member, and a connecting member disposed between said pressing member and said cam portion for selectively intercepting and transmitting the pressing force exerted by said cam portion to said pressing member.

4,417,683

CENTERING DEVICE FOR ELECTRICAL COMPONENTS

Alan C. Lewis; Phillip A. Ragard, both of Binghamton, and Robert C. Shiptenko, Johnson City, all of N.Y., assignors to Universal Instruments Corporation, Binghamton, N.Y.

Filed Nov. 9, 1981, Ser. No. 319,405
Int. Cl.³ B23P *19/04*; H01R *43/04*
U.S. Cl. 227—109 **6 Claims**

1. An apparatus for centering the uncentered bodies of electrical components each body having leads extending from opposite ends thereof, said apparatus comprising:

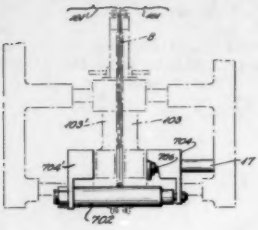
first and second sections movable toward and away from each other for reception of said body therebetween;

first and second means for varying the spacing between said sections, said first spacing varying means capable of providing a first spacing variation larger than a second spacing variation provided by said second spacing varying means;

said first spacing varying means comprising a shaft having oppositely threaded equally spaced screw portions and threaded means in each of said sections for receiving one of said screw portions in a threaded relation having slack, and means for selectively rotating said shaft in opposite

directions to open and close said spacing to a predetermined spacing of said sections; and

said second spacing varying means comprising means for removing said slack in said threaded relation such that said spacing is widened relative to said predetermined spacing



for reception of said body between said sections to prevent engagement of said sections with said body and said spacing is subsequently narrowed relative to said predetermined spacing to engage at least one of said sections with one of said uncentered body ends and center said component upon actuation of said slack removing means.

4,417,684

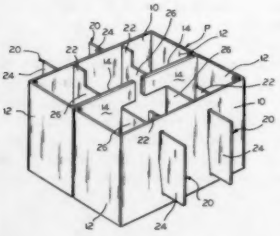
PARTITION DEVICE

Boyd T. Skaggs, Louisville, Ky., assignor to Container Corporation of America, Chicago, Ill.

Filed Feb. 16, 1983, Ser. No. 466,871

Int. Cl.³ B65D *5/48*

U.S. Cl. 229—15 **3 Claims**



1. An inner packing device for use within an outer container or wrapper to form therewith twelve cells, said structure being formed from a unitary blank of foldable sheet material, such as paperboard, to provide:

(a) a pair of opposed side panels disposed parallel to, but spaced from, each other and each presenting a pair of vertical slots extending therethrough;

(b) opposed pairs of end panels foldably joined at outer edges to end edges of respective side panels and extending inwardly therefrom and generally normal thereto;

(c) opposed pairs of center panel sections foldably joined at end edges to inner edges of respective end panels;

(d) each pair of said center panel sections being disposed in face-to-face relation, having corresponding edges foldably joined to each other, and being positioned in end-to-end, co-planar relation with respective center panel sections of the other of said pairs to form a center panel structure disposed between and parallel to, but spaced from, said side panels;

(e) opposed pairs of generally cruciformly-shaped transverse panels extending parallel to said end wall panels, but spaced therefrom and from each other;

(f) each of said transverse panels including a center portion with a pair of integral inboard and outboard side portions extending therefrom;

(g) said inboard side portion being formed from material cut from and being foldably joined to a related center panel section adjacent a free end thereof on a vertical fold line;

(h) said outboard side portion being disposed to extend through a slot in a related side panel and outboardly therebeyond.

4,417,685

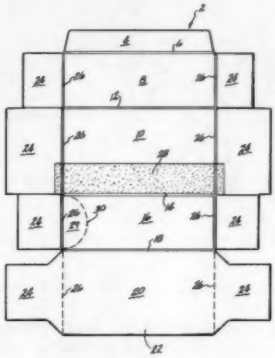
ERECTABLE CARTON WITH ADHESIVE RELEASE

Ralph J. Korte, Darien, Ill., assignor to Champion International Corporation, Stamford, Conn.

Filed Oct. 26, 1981, Ser. No. 314,951

Int. Cl.³ B65D *5/36, 5/42*

U.S. Cl. 229—41 B **8 Claims**



1. A paperboard carton which is expandable to an operable form from a flattened bulk shipping form said carton comprising:

(a) a plurality of side panels connected to each other along parallel bending score lines and a pair of end closure flaps foldably connected to each side panel, said panels being disposed in face-to-face juxtaposition when said carton is in said flattened form;

(b) a glue seam formed on said carton by overlapping glue flaps disposed on opposite ends of a blank from which said carton is formed, an innermost one of said glue flaps lying in face-to-face contact with a portion of the inside surface of one of said side panels when said carton is in said flattened form; and

(c) a coating of glue release material completely coating said portions of said inside surface of said one of said side panels on said carton in an area lying adjacent to said glue seam when said carton is in said flattened form, said glue release material extending outwardly of each end of said one of said panels and onto respective end closure flaps to prevent oozing glue from adhering said glue seam to said inside surface of said one of said side wall panels on said carton whereby said carton may be readily expanded from said flattened form.

4,417,686

OCTAGON TRAY WITH REINFORCED HANDHOLE

Roger M. Wozniacki, Charlotte, N.C., assignor to International Paper Company, New York, N.Y.

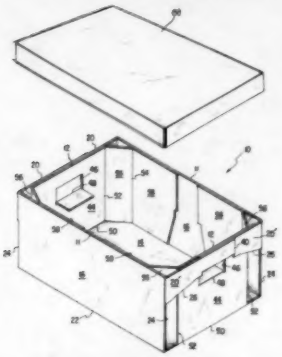
Filed Feb. 28, 1983, Ser. No. 470,688

Int. Cl.³ B65D *5/46, 5/26*

U.S. Cl. 229—52 B **7 Claims**

1. A one-piece blank of stiff, resilient and foldable material such as corrugated paperboard, the blank being adapted to be folded into a tray, the blank being of generally rectangular

form, the blank having a plurality of score lines and cut lines, the blank having a central bottom forming panel (14) defined by and bound on its upper and lower edges by score lines (22) and on its left and right edges by both cut and score lines (24, 50), the upper and lower edges (22) of said central panel (14) each carrying a generally T-shaped panel (16, 20, 20') whose base (22) is positioned at a respective edge of the central panel and whose bare ends extend toward the right and the left edges (12', 12) of the one piece blank, each T-shaped panel being defined by cuts (24, 26, 28, 30, 32) extending along the sides of



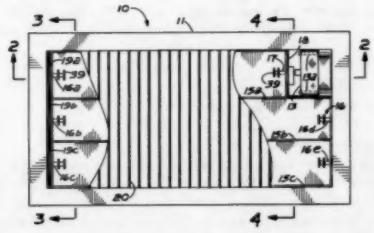
the base (16) of each T-shaped panel and running laterally away from it, the top (11) of each T-shaped panel extending along and being coincident with a respective end forming panel (44), the latter defined by said cuts (24, 26, 28, 30, 32), each end forming panel joined to a respective right or left edge of said central panel at the said central panel score lines, one edge of each of said end forming panels being coincident with a respective right or left edge portion (12', 12) of the one piece blank, the sides (24) of the base of each T-shaped panel (16) being non-colinear with the score lines (50) at the left and right edges of the central, bottom forming panel (14).

4,417,687

MULTI-BLADE AUTOMATIC AIR REGISTER DAMPER

Willie T. Grant, 400 S. Simms St., Lakewood, Colo. 80228

Filed Jun. 7, 1982, Ser. No. 385,765
Int. Cl.³ F24F *13/10*
U.S. Cl. 236—9 A **9 Claims**



1. Damper means automatically controlling the flow of a heating/cooling medium through ducts of a heating/cooling device, said ducts terminating in room floor, wall, or ceiling registers, said damper means comprising combinationally:

(a) housing means having end panels and side panels forming an enclosure with angular support means, said end panels receiving bearing pins supporting gear means of transmission means and damper blades of flow control means; said panels receiving grille bars spanning the top of said enclosure;

(b) said flow control means being comprised of air sealing means and multiple damper blades rotatably supported in said enclosure by said bearing pins and a motor shaft, said bearing pins having attachment combinationally to said gear means and said damper blades;

(c) said transmission means comprising motor means and said gear means, said motor means having an integral shaft, with attaching cam, connecting to a driver blade of said damper blades, transmitting motor rotation from said motor means to other said damper blades, all said blades being interconnected by said gear means;

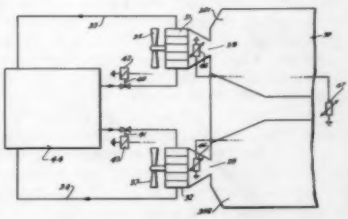
(d) electrical control means energizing and controlling said motor means of said transmission means and a fuel control device of said heating/cooling device, said electrical control means being comprised of thermostatic means electrically connecting relay means and said motor means to said fuel control device through switch means and light means; said relay means comprising first contacts operable by means of a coil, and second contacts operable by a time delay device.

4,417,688

TEMPERATURE CONTROL SYSTEM FOR VEHICLE PASSENGER COMPARTMENT

Eberhard Schnaibel, Hemmingen, and Erich Junginger, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 78,594, Sep. 24, 1979, abandoned. This application Feb. 1, 1982, Ser. No. 344,772
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1978, 2849275
Int. Cl.³ G05D *23/00*
U.S. Cl. 236—91 F **11 Claims**



1. A negative-feedback temperature control system for conditioning the temperature of air in the passenger compartment of a vehicle, comprising, in combination,

heat exchanger means located to exchange heat with air entering the passenger compartment;

adjusting means for adjusting the flow of heat-exchange fluid flowing through the heat exchanger means;

passenger-compartment temperature sensing means for sensing the temperature inside the passenger compartment,

heat-exchanger temperature sensing means for sensing the temperature at or near the surface of the heat exchanger means;

adjustable command transducer means operable for selecting a passenger-compartment temperature;

servo comparator means operative for receiving feedback and command signals and producing an error signal;

actuating means connected to the adjusting means for actuating the latter and connected to the servo comparator means for receipt of a signal dependent upon the error signal;

means connected to the command transducer means and to the servo comparator means for applying to the latter a command signal derived from the command transducer means; and

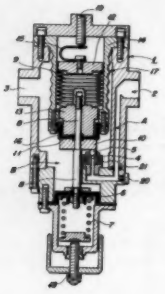
means applying to the servo comparator means a feedback signal derived from the passenger-compartment temperature sensing means and the heat-exchanger temperature sensing means, including means applying to the servo comparator means a signal whose value depends upon the rate of change with respect to time of the temperature sensed by the heat-exchanger temperature sensing means.

4,417,689

PRESSURE REGULATOR WITH TEMPERATURE COMPENSATION DEVICE

Akira Sasaki, 358, Ohganedaira 5-chome, Matsudo-shi, Chiba-ken, Japan

Filed May 25, 1982, Ser. No. 381,783
Claims priority, application Japan, Aug. 31, 1981, 56-136741
Int. Cl.³ G05D *27/00*
U.S. Cl. 236—92 R **10 Claims**



7. In a pressure regulator with a temperature compensation device, comprising a main body having primary and secondary side fluid passages, a valve stem coupled to operate a valve, said valve stem extending upwardly from the center of a main diaphragm operated by the opposing forces of a pressure on said secondary side fluid pressure passage within said main body of said regulator and a pressure exterted by a pressure regulating spring, wherein the fluid pressure on the secondary side of said main diaphragm is maintained substantially constant by controlling the opening of said valve through the operation of said valve stem,

the improvement comprising:

a cylindrical inner casing formed of a material having good thermal conductivity and provided toward the upper end of said valve stem in a state sealed off from the passages in said main body, said cylindrical casing having a bottom which comprises an auxiliary diaphragm;

an assembly of bimetal plates in stacked arrangement, opposite sides of said plates having different coefficients of thermal expansion, the sides of adjacent plates having like coefficients of thermal expansion facing each other, said bimetal plates being arcuately bendable responsive to a temperature rise thereof;

a pair of washers for retaining said assembly within said inner casing between said pair of washers;

means for mechanically coupling said valve stem to said assembly of bimetal plates such that said valve stem is pushed downwardly by the expansive stroke of said bimetal plates when said bimetal plates bend arcuately with rising temperature; and

means for mechanically coupling said valve stem to said pressure regulating spring to compress said pressure regulating spring when said valve stem is pushed downwardly by said assembly of bimetal plates;

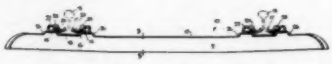
at least one of said main diaphragm and auxiliary diaphragm being formed of a resilient synthetic resin material and having sides formed as bellows.

4,417,690

STEEL RAILROAD SLEEPER

William F. Langman, Lonsdale, Australia, assignor to Omark Industries, Inc., Portland, Oreg.

Filed Nov. 7, 1980, Ser. No. 205,014
Claims priority, application Australia, Nov. 27, 1979, PE1496
Int. Cl.³ E01B *3/16*
U.S. Cl. 238—59 **8 Claims**



8. A sleeper pressed from rolled steel stock of initially uniform cross-section and having side walls and an upper wall and two pairs of raised platforms each formed by upward deformation of a portion of the upper wall,

each platform having a flat portion adapted for receipt of a rail securing means and a first end wall which is approximately vertical, two side walls and a second end wall for each platform, the vertical first end walls of each pair of platforms defining the side edges of a respective rail retaining recess and all walls of each platform increasing the section modulus of the rail sleeper in the cross-section of the platform.

4,417,691

TURBINE DRIVE WATER SPRINKLER

George H. Lockwood, Wilton Manors, Fla., assignor to Anthony Manufacturing Corp., Azusa, Calif.

Continuation-in-part of Ser. No. 914,507, Jun. 12, 1978, abandoned, which is a continuation-in-part of Ser. No. 740,061, Nov. 8, 1976, abandoned. This application Dec. 1, 1980, Ser. No. 211,586
Int. Cl.³ B05B *3/04*
U.S. Cl. 239—206 **41 Claims**

1. A water sprinkler, comprising:

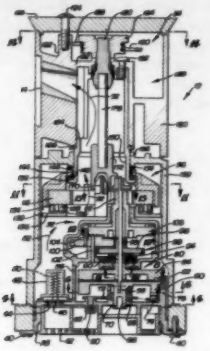
a sprinkler housing for connection to a supply of water under pressure;

a spray head carried by said housing and including a spray nozzle mounted for rotation with respect to said housing, said spray nozzle being oriented for direction of a stream of water radially outwardly from said spray head;

a drive assembly rotationally driven by at least a portion of the water under pressure for providing a continuous rotational output; and

an incremental motion mechanism including means coupled between said drive assembly and said spray nozzle for incrementally rotating said spray nozzle through a plurality of angularly spaced stationary positions of controlled duration separated by relatively rapid rotational movements through predetermined angular increments be-

tween said stationary positions, said rotational movements being of an angular magnitude such that the angular loca-



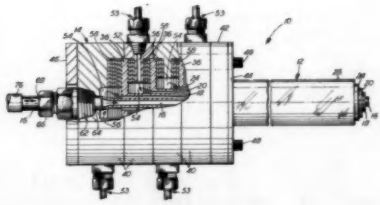
tion of each stationary position is varied upon successive rovolutions of said spray nozzle.

4,417,692

VAPOR-PHASE AXIAL DEPOSITION TORCH

Matthew J. Andrejco, North Hanover Township, Burlington County, and Eugene Potkay, Hamilton Township, Mercer County, both of N.J., assignors to Western Electric Co., Inc., New York, N.Y.

Filed Apr. 26, 1982, Ser. No. 371,628
Int. Cl.³ F23D *13/36*
U.S. Cl. 239—424 **4 Claims**



1. A torch for fabricating lightguide preforms by the vapor-phase axial deposition process, comprising:

a plurality of coaxially aligned elongated tubes with a coaxially aligned inner tube that is movable in an axial direction relative to the other tubes during the deposition process;

each of the inner and intermediate tubes have a plurality of accurately machined splines on the outer surface thereof to maintain a predetermined distance between said tubes; and

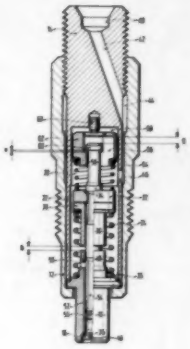
each of the plurality of outer tubes has a radially disposed flange on a first end thereof which is separated by and captured between a plurality of annular spacer members.

4,417,693

FUEL INJECTION VALVE FOR AN INTERNAL COMBUSTION ENGINE

Paul Füssner, Sindelfingen; Karl Hofmann, Remseck; Iwan Komaroff, Regensburg; Kurt Seifert, Esslingen-Zollberg; Dietrich Trachte, Kornwestheim; Wilhelm Vogel, Stuttgart, and Hans-Jörg Vogtmann, Markgröningen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,000
Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120060
Int. Cl.³ B05B *1/00, 1/32*
U.S. Cl. 239—453 **13 Claims**



1. Fuel injection valve-nozzle combination for an internal combustion engine having

a valve body (**10**, **12**, **14**) formed with an internal space defining a first chamber portion (**20**) and a second chamber portion (**68**);

a needle valve element (**18**) slidable in the first chamber portion;

means (**40**, **42**, **44**) to conduct fuel to the first chamber portion (**20**) in the valve body;

a closing spring (**24**) bearing against the valve element and the valve body, respectively, and urging the valve element into valve closing position, said valve element being movable to open position upon application of an opening force thereto counter the spring; and

an inertia body (**62**), and coupling means (**60**) coupling the inertia body to the needle valve element upon opening movement only of the needle valve element,

wherein

the inertia body (**62**) is movably retained in the second chamber portion in the body,

a throttle connection duct is provided connecting said first and second chamber portions;

the outlet (**46**) from the fuel conduction means into the first chamber (**20**) is located in said first chamber portion and downstream of the inertia mass (**62**);

wherein the second chamber portion forms a fluid storage chamber

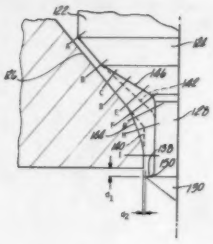
and movement of the inertia mass causes throttled displacement of fluid between said chamber portions through said throttle connection duct.

4,417,694

INJECTOR VALVE WITH CONTOURED VALVE SEAT AND NEEDLE VALVE INTERFACE

William B. Claxton, West Bloomfield, Mich., and Joseph C. Cromas, Newport News, Va., assignors to The Bendix Corporation, Southfield, Mich.

Filed Oct. 22, 1980, Ser. No. 199,124
Int. Cl.³ F02M 61/00
U.S. Cl. 239—533.12 6 Claims



1. A fuel injection valve having a high flow rate metering portion comprising:

a valve housing having a fuel flow passage which communicates fuel from a pressurized source to a truncated conical valve seat having a closure surface, said seat converging toward the axis thereof and intersecting a cylindrical metering orifice axially aligned with said flow passage;

a needle valve, reciprocal in said fuel flow passage, including a valve tip having a closure surface which is operable to close the injection valve when brought into contact with said closure surface of said valve seat, the surface of said valve tip converging toward the axis thereof for forming a pintle and an annular fuel passage with said valve seat in the area downstream of said closure surface and upstream of said metering orifice for decreasing the pressure drop of the fuel therethrough; and

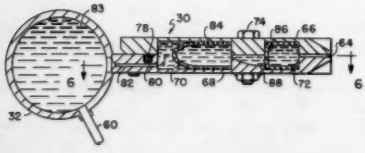
an abruptless transitional curving surface on said valve seat beginning at said cylindrical metering orifice and tangentially ending at said closure surface, said transitional surface cooperating with said pintle for maintaining the fluid flow through said annular fuel passage so as not to induce flow separation and cavitation from said cylindrical metering orifice.

4,417,695

WATER PASTE EXTRUSION DIE

Walter Engels, Tryon, N.C., and Charles E. Willbanks, Spartanburg, S.C., assignors to Milliken Research Corporation, Spartanburg, S.C.

Filed Jun. 21, 1982, Ser. No. 390,213
Int. Cl.³ B05C 1/08
U.S. Cl. 239—590.3 9 Claims



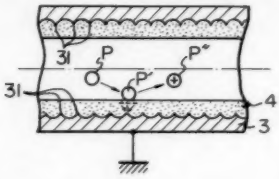
1. An extruder for a liquid comprising: an elongated body member having an inlet side and an outlet side, said body member having an upper portion and a lower portion connected together to form said body member, means forming a first chamber and a second chamber in said body member, a plurality of openings in said inlet side of said body member and in communication with said first chamber, a wall member separating said first chamber and said second chamber, a plurality of openings in said wall member between said first chamber and said second member and a slot in said outlet side of said body member in communication with said second chamber, each of said plurality of openings being knife shaped to even out the flow of liquid from the first chamber to the second chamber.

4,417,696

TRIBOELECTRIFICATION TYPE ELECTROSTATIC PAINT GUN FOR PAINT IN A POWDER FORM

Hiroyoshi Kako, Aichi, and Nobuo Kobayashi, Toyota, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Aichi, Japan

Filed Jul. 24, 1981, Ser. No. 286,637
Claims priority, application Japan, Aug. 29, 1980, 55-121695[U]
Int. Cl.³ B05B 5/02
U.S. Cl. 239—690 7 Claims



1. An electric painting apparatus of the triboelectrification type, comprising means for defining a passageway through which a flow of paint in a powder form passes, said passageway having an inlet connected to a source of the paint and an outlet spaced from an object to be painted, means for defining, at a position adjacent to the outlet, a triboelectrification layer made of a dielectric material which is, in the triboelectric series, located at a position spaced from the position where a material for forming the paint is located, said layer having a plurality of localized creep discharge areas for removing the charge from the layer to the ground.

4,417,697

CRUSHING/DISCHARGING DEVICE FOR MATERIALS BEING DRIED IN A MULTISTAGE TYPE VACUUM DRYING APPARATUS

Yukihiro Saiki, Saitama; Eitaro Kumazawa, Sayama, and Yozo Ishioka, Higashikurume, all of Japan, assignors to Snow Brand Milk Products Co., Ltd., Sapporo, Japan

PCT No. PCT/JP81/00063, § 371 Date Sep. 21, 1981, § 102(e) Date Sep. 21, 1981, PCT Pub. No. WO81/02689, PCT Pub. Date Oct. 1, 1981
PCT Filed Mar. 25, 1981, Ser. No. 306,912
Claims priority, application Japan, Mar. 25, 1980, 55-37891
Int. Cl.³ B02C 18/06
U.S. Cl. 241—65 14 Claims

1. A vacuum drying apparatus, comprising:

an enclosure having an internal vacuum chamber;

an endless conveyor belt disposed within said vacuum chamber, said conveyor belt having a substantially horizontal upper reach, said upper reach having a feed end and a discharge end, said conveyor belt having a lower return reach and return portions respectively connecting the opposite ends of said lower return reach to the feed end and discharge end of said upper reach;

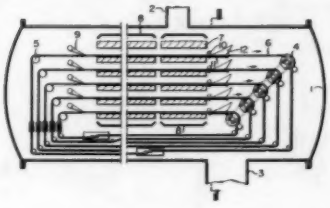
supply means for feeding the material to be dried onto the upper surface of said upper reach of said conveyor belt

near to the feed end thereof so that the material moves with said upper reach of said conveyor belt to the discharge end thereof;

heating means associated with said upper reach of said conveyor belt for heating the material to assist in drying the material;

a casing mounted adjacent to the discharge end of said upper reach;

a crushing device disposed within said casing, said crushing device comprising a first, fixed, cutter blade extending longitudinally away from said discharge end of said upper reach and adapted for peeling off the material from said upper reach and directing it into said casing, said cutter blade having a multiplicity of transversely spaced-apart teeth on the end thereof remote from said discharge end of said upper reach of said conveyor belt, said crushing device also comprising a rotary cutter mounted for rotation about a substantially horizontal axis extending transversely to said upper reach of said conveyor belt, said rotary cutter comprising a multiplicity of substantially radially extending, axially spaced-apart cutting pins which are interdigitated with said teeth so that rotation of said rotary cutter crushes the material by moving said cutting pins through the interstices between said teeth;



a screw conveyor disposed within said casing below said fixed cutter blade and said rotary cutter and adapted for receiving the crushed material, said screw conveyor being rotatable about a substantially horizontal axis that extends transversely to said upper reach of said conveyor belt, said screw conveyor having a helical screw flight for moving the crushed material in a direction transverse to said upper reach of said conveyor belt, said cutting pins being interdigitated with said screw flight so that said cutting pins move through the spaces between adjacent convolutions of screw flight so that the crushed material is smoothly and continuously moved into said screw conveyor.

4,417,698

WINDING PROCESS FOR CATHODE-RAY TUBE DEFLECTION RINGS

Didier Pernet, Auxonne, and Francois Pater, Varois et Chaignot, both of France, assignors to Videocolor S.A., France

Filed Apr. 22, 1981, Ser. No. 256,375
Claims priority, application France, Apr. 22, 1980, 80 08964
Int. Cl.³ H01F *41/06*; B65H *81/08*
U.S. Cl. 242—7.03 **4 Claims**

1. A process for winding a semi-ring core having first and second arcuate edges, the method comprising the steps:

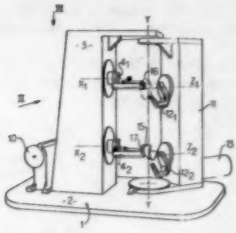
fastening the ring along a median plane;

positioning a single wire winding arm adjacent the ring;

rotating the arm about a first axis;

pivoting the arm about a second axis orthogonal to the first; and

rotating the ring about a third axis, orthogonal to the second axis and oblique relative to the first axis, during pivotal rotation of the arm to wind wire symmetrically about the median plane, the windings being of increasing inclination as the median plane is approached for producing a winding continuous along a first arcuate edge and discontinuous along a second arcuate edge between points along the second arcuate edge equidistant from the median plane.

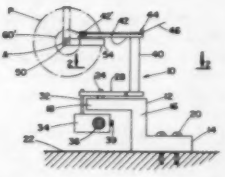


4,417,699

APPARATUS FOR WINDING A WIRE OR THREAD ON C-SHAPED CORES

Alfred Skrobisch, 64 Fulton Blvd., Commack, N.Y. 11725

Filed Nov. 19, 1981, Ser. No. 322,759
Int. Cl.³ H01F *41/06*; B65H *54/30, 57/24, 57/28*
U.S. Cl. 242—7.15 **9 Claims**



1. Apparatus for winding a coil of wire-like material on a C-shaped core structure wherein the width of said coil is greater than the gap in said core, comprising:

an arm;

means mounting said arm for angular motion on and slideable along a stationary axis whereby one end of said arm moves in a straight line;

bearing means on said arm for carrying said wire-like material to said C-shaped core structure which has spaced free ends defining a gap there-between;

means for rotating said C-shaped core structure on another axis parallel to said straight line;

a stationary support disposing said one end of said arm through said gap between said free ends of said core structure;

another arm carried by said stationary support, rotatable on and slideable along said stationary axis;

spacer means connecting said first named and other arm in fixed parallel disposition so that both arms turn and slide identically and

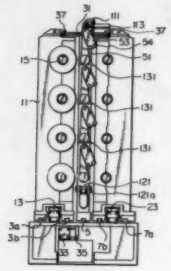
said reciprocable drive means including a coupling means directly engaging one end of said other arm to move the same in another straight line parallel to said first named straight line, so that said one end of said first named arm reciprocates in said gap when said drive means reciprocates said one end of said other arm back and forth along said other staight line.

4,417,700

APPARATUS FOR WINDING A PLURALITY OF YARNS AND A METHOD FOR CHANGING BOBBINS IN THE APPARATUS

Hiroshi Ueda; Katsumi Hasegawa, and Masazumi Imae, all of Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Nov. 5, 1981, Ser. No. 318,574
Claims priority, application Japan, Nov. 7, 1980, 55-155844
Int. Cl.³ B65H 54/02, 67/04
U.S. Cl. 242—18 A 19 Claims



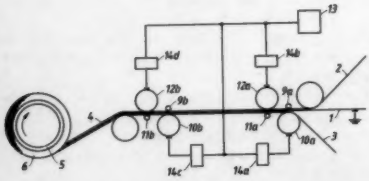
1. An apparatus for winding a plurality of yarns comprising:
a pair of spindle frames independently and horizontally movable along parallel passages;
each of said spindle frames having a plurality of rotatable spindles horizontally projecting therefrom, which are vertically superposed and which are axially displaced by a predetermined length from the top spindle to the bottom spindle;
a threading arm frame disposed between said spindle frames and having threading arms pivotally mounted thereon, the number of said threading arms being the same as that said spindles mounted on each spindle frame, and the threading arms are axially displaced by said predetermined length from the top arm to the bottom arm; and
electric motors connected to said rotatable spindles, respectively.

4,417,701

METHOD AND MEANS FOR CONTROLLING THE MANUFACTURE OF WINDINGS FOR INDUCTIVE APPARATUS

Bertil Moritz, Ludvika, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Feb. 17, 1982, Ser. No. 349,655
Claims priority, application Sweden, Feb. 19, 1981, 8101112
Int. Cl.³ B65H 39/16; H01G 7/00
U.S. Cl. 242—55 10 Claims



5. Means for controlling the manufacture of a winding for an inductive apparatus, which winding is of the kind comprising a plurality of turns of a sheet composed of an electrically conductive metallic foil and an electrically insulating film on each side of said metallic foil, said means comprising

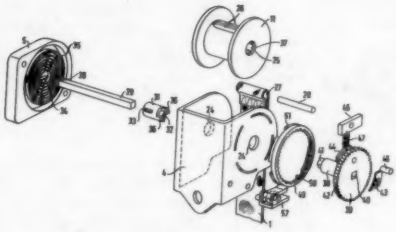
at least one electrode device having at least two rolls arranged one on each side of said sheet,
means pressing at least one of said rolls against said sheet with a certain pressure across the entire width of said sheet,
a voltage source for establishing a voltage difference between said rolls and said conductive metallic foil,
members for sensing a leakage current, if any, which via each of said rolls passes through the respective insulating film, and
members for temporarily interrupting the winding process to enable strengthening of the insulation if the leakage current exceeds a predetermined value.

4,417,702

AUTOMATIC ROLL-UP DEVICE FOR A SAFETY BELT

Artur Föhl, Schorndorf, Fed. Rep. of Germany, assignor to Repa Feinstanzwerk GmbH, Alfdorf, Fed. Rep. of Germany

Filed Mar. 3, 1981, Ser. No. 240,153
Claims priority, application Fed. Rep. of Germany, Mar. 4, 1980, 3008299
Int. Cl.³ A62B 35/02; B65H 75/48
U.S. Cl. 242—107.2 13 Claims



1. Automatic roll-up device for a safety belt in a vehicle with a braking or clamping device comprising, a control disc of lightweight construction in fixed, rigid connection with a belt roller rotatably mounted in a housing, a vehicle sensitive activating sensor and a belt sensitive activating sensor to activate the control disc when a predetermined acceleration or deceleration of the vehicle is exceeded, and locking means connected to the control disc to effect blocking of the belt roller, and said braking- or clamping device arranged after the belt roller and through which the belt from the belt roller passes in the direction the belt is pulled out, said braking- or clamping device activated solely by tension on the belt resulting from the blocking of the belt roller, wherein the control disc has small outer teeth, and wherein the vehicle-sensitive activating sensor has a locking lever, wherein the outer teeth can be engaged by the locking lever of the vehicle-sensitive activating sensor, wherein the control disc carries a hinged, belt-sensitive inertial mass, wherein a spring urges the mass to an inactive position, and wherein a set of small inner teeth are fixed at the housing surrounding the control disc and spaced therefrom and said mass when activated engages the set of inner teeth.

4,417,703

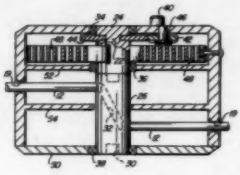
QUICK RETRIEVE CORD REEL

Dennis G. Weinhold, P.O. Box 462, Chapman, Ariz. 67431

Filed Nov. 19, 1981, Ser. No. 322,923
Int. Cl.³ B65H 75/48
U.S. Cl. 242—107.12 6 Claims

1. A floating cord reel for storing cord, comprising:
a sectioned axle having a spindle section and a bobbin section and defining an aperture lying generally in a diametrical plane of said bobbin section of said axle, said bobbin section removeably engaging said spindle section to facilitate threading said cord through said aperture;

housing means having said axle rotatably mounted therein for maintaining said cord in general perpendicularity with respect to said axle as said cord approaches said bobbin section of said axle, said housing means including a removeable end plate to allow said bobbin section to be disengaged from said spindle section; and



rotating means engaging said spindle section of said axle for selectively rotating said axle to spool said cord about said bobbin section of said axle and further for permitting said cord to be selectively unspooled from said bobbin section of said axle.

4,417,704

MAGNETIC RECORDING TAPE CASSETTE

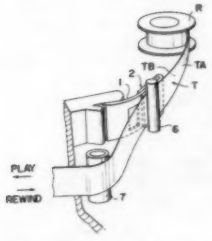
Kengo Oishi, and Osamu Suzuki, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Odawara, Japan

Filed Nov. 25, 1981, Ser. No. 324,835

Claims priority, application Japan, Dec. 18, 1980, 55-182183[U]

Int. Cl.³ G03B *1/04*; G11B *15/32*

U.S. Cl. 242—197 **1 Claim**



1. A magnetic recording tape cassette having at least a hub for winding therearound a magnetic recording tape, a guide member disposed on the recording side of the magnetic recording tape and a tape pad member which is pressed against the base side of the magnetic recording tape when the magnetic recording tape runs in contact with the guide member, characterized in that at least the part of the tape pad which is brought in direct contact with the magnetic recording tape when the tape pad is pressed thereagainst is made of self-lubricating and hardwearing plastic resin wherein said plastic resin is ultra-high-molecular-weight-high-density polyethylene containing at least one additive such as carbon or graphite with an average molecular weight of 2,000,000 to 4,000,000 and a specific gravity of 0.90 to 0.98.

4,417,705

TAPE CASSETTE

Toshikazu Kato, Hino, and Sinichi Saitou, Hachioji, both of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

Filed May 26, 1981, Ser. No. 266,936

Claims priority, application Japan, May 30, 1980, 55-73821

Int. Cl.³ G11B *15/32*

U.S. Cl. 242—199 **7 Claims**

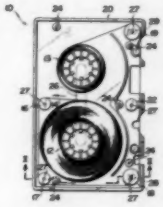
1. In a tape cassette having a front side adapted to confront a tape head of a tape recorder and a rear side remote from said tape head, comprising:

a pair of cassette halves defining a tape receiving chamber therebetween;

a pair of reel hubs mounted between said cassette halves;

a magnetic tape wound on said reel hubs and adapted to be fed from one of said reel hubs to the other; and

guide roller means mounted between said cassette halves for guiding the travel of said magnetic tape between said reel hubs, said guide roller means including a pair of front guide rollers arranged on the front side of said tape cassette, said front guide rollers each having a rotation axis substantially perpendicular to said cassette halves and having flanges thereon for engaging the tape to limit the position of the tape travel in the vertical direction of the cassette;



the improvement comprising:

a pair of position determining holes formed in at least one of said cassette halves to determine the position of said tape cassette relative to a chassis of a tape recorder, said pair of position determining holes each having a right circular cylindrical inner peripheral guiding surface portion and each of said position determining holes being formed under a respective associated front guide roller such that an extension of the rotation axis of said front guide rollers passes through its respective determining hole which is located therebeneath;

said right circular cylindrical inner peripheral guiding surface portion being adapted to engage in surface-to-surface contact with a right circular cylindrical outer surface portion of a guide pin of the tape recorder.

4,417,706

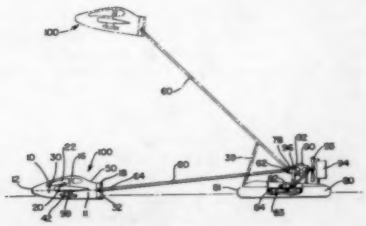
FLYING WING DRIVEN BY AN EARTHBOUND MACHINE

Donald L. Miller, 307 Steuben St., Horseheads, N.Y. 14845

Filed Dec. 12, 1980, Ser. No. 215,909

Int. Cl.³ B64C *39/00*; B63H *7/02*

U.S. Cl. 244—2 **10 Claims**



1. A piloted flying craft which is connected to a surface vehicle, said piloted craft comprising:

a winged body having a front end, an opposite end, a pilot compartment adjacent to said front end, a vertically dis-

placeable connection means attached to said opposite end, and a longitudinal axis entending from said front end to said opposite end;

push tube means, mounted between the surface vehicle and said winged body, said push tube means being connected to said connection means for propelling said winged body in the air vertically relative to the ground surface, said push tube means further defining a line of thrust applied to said winged body due to the motion of the surface vehicle; and

means for controlling the line of thrust defined by said push tube by vertically adjusting the position of the connection means relative to said longitudinal axis of said winged body.

4,417,707

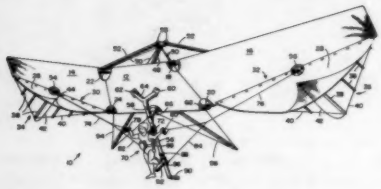
HUMAN POWERED HANG GLIDER

Ken Leong, 201 Oakland Ave., #4, Oakland, Calif. 94611

Filed Jan. 26, 1982, Ser. No. 342,833

Int. Cl.³ B64C *33/00, 31/02*

U.S. Cl. 244—11 **6 Claims**



1. A hang glider, comprising a fixed wing portion having two laterally disposed sides, a pair of movable wing portions, each respectively pivotally attached to the sides of said fixed wing portion, each of said movable wing portions comprising an air foil having a trailing edge, a pair of flexible sheet members each respectively attached to the trailing edges of said movable wing portions, a support structure, through which air may freely pass, for the flexible sheet members, means connected to said movable wing portions to pivot said wing portions in a downward direction, biasing means connected to said movable wing portions to pivot said wing portions in an upward direction opposed to the downward direction when force from said manual force applying means is released, said flexible sheet members being movable away from said support structure when said movable wing portions are moved in the upward direction and movable into engagement with said support structure when said movable wing portions are moved in the downward direction, said support structure comprising a plurality of frame members extending rearwardly away from the trailing edge of each of said movable wing portions and an edge member extending between each of the frame members, each of said support structures so formed being substantially co-extensive with one of said flexible sheet members when one of said flexible sheet members is in engagement with said support structure.

4,417,708

INTERCHANGEABLE WING AIRCRAFT

Rosario O. Negri, Great Neck, N.Y., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Filed May 12, 1982, Ser. No. 377,352

Int. Cl.³ B64C *3/38*

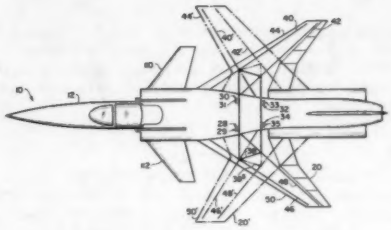
U.S. Cl. 244—45 R **7 Claims**

1. An interchangeable wing aircraft comprising: a common fuselage having a cut-out for the reception of a wing, said cut-out having associated therewith wing mounting means including hard points fixed in a standard pattern on fuselage structure in close proximity to the center of gravity of said aircraft;

wings of different planforms to be used interchangeably with said fuselage, said wings having a center section which fits into said wing cut-out;

each of said wings having semi-spans joined at the roots thereof by a torque box center section which spans said fuselage transversely, each semi-span of each of said wings having at least a front main spar and a rear main spar;

said torque box having a standard pattern of hard points mating with said standard pattern of fuselage hard points for mounting said wing, each of said torque boxes having at least a front and a rear center section spar joined at their outer ends by ribs to form a quadrilateral load-carrying structure;



said outer ends of said front center section spar of said torque box being connected to said front main spars of said semi-spans and said outer ends of said rear center section spars of said torque boxes being connected to said rear main spars of said semi-spans of each of said wings for transmitting wing loads into said fuselage structure;

wherein the lengths of said front and rear center section spars of said torque boxes in each of the different planform interchangeable wings are selected to intersect for connection to said front and rear main spars of the semi-spans of said wings such that the quarter chord of each of said different wings is positioned at about the vertical plane of the center of gravity of said aircraft when said wings are mounted on said common fuselage.

4,417,709

SPREADING DEVICE

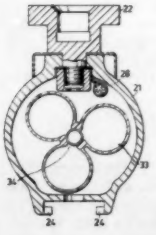
Björn O. Fehrm, Järfälla, Sweden, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 17, 1981, Ser. No. 244,542

Claims priority, application Sweden, Mar. 17, 1980, 8002058; Sep. 26, 1980, 8006725

Int. Cl.³ B64D *1/16*

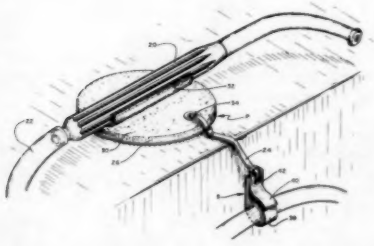
U.S. Cl. 244—136 **7 Claims**



1. A chaff spreading device for attachment to equipment supporting means on an aircraft comprising:

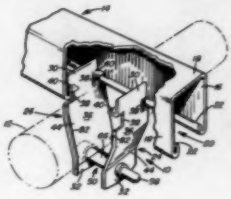
(a) an aerodynamically shaped cover having an ejection opening;
(b) a magazine disposed within the cover for containing bundles of the chaff;
(c) displacement means for moving bundles of the chaff toward the ejection opening;
(d) a driving device for moving the displacement means;
(e) first attachment means provided on a first side of the cover for attaching the chaff spreading device to the equipment supporting means on the airplane;
(f) second attachment means provided on a second side of the cover for cooperating with suspension means of equipment to be suspended from the airplane, thereby supporting the equipment;
(g) a coupling member provided on the first side of the cover for coupling with a corresponding member on the aircraft to receive power and control signals from the aircraft;
(h) a contact member provided on the second side of the cover for coupling with a corresponding member on the equipment to be suspended, effecting transmission to the equipment of signals received from the aircraft; and
(i) transfer means connecting the coupling member to the driving device and the contact member for providing received power and control signals to the driving device and the contact member.

4,417,710
COMBINED SURGICAL INSTRUMENT AND TUBE HOLDER DEVICE
Edwin L. Adair, Denver, Colo., assignor to The Urology Group, P.C., Littleton, Colo.
Filed Jan. 25, 1982, Ser. No. 342,209
Int. Cl.³ F16L *3/00*
U.S. Cl. 248—51 **10 Claims**



1. A device for releasably supporting a surgical instrument and a tube or wire connected thereto, said device comprising:
an attachment pad having an adhesive coating on a first side thereof for securing said pad to a permanent fixture;
a tube holding strip having a resilient foam layer on one side and a fabric layer of intertwining material on the opposite side;
a tab attached to said strip adjacent one end thereof and extending coextensively with at least a portion of said foam layer side, said tab having interlacing means on the side thereof facing said foam layer so that when said foam layer is looped around a tube or wire said tab overlaps the fabric side of said strip whereupon said interlacing means is engagable with said intertwining material to releasably hold the tube or wire; and
a resilient connecting strap having one end connected to said attachment pad and the other end connected to said tube holding strip so that the tube or wire is held in a predetermined place but is yieldably movable in response to manipulation of the surgical instrument so as not to restrain movement of the instrument.

4,417,711
PIPE HANGER
Edward A. Madej, Verona, Pa., assignor to Robroy Industries, Verona, Pa.
Filed May 17, 1982, Ser. No. 378,754
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—74 R **12 Claims**

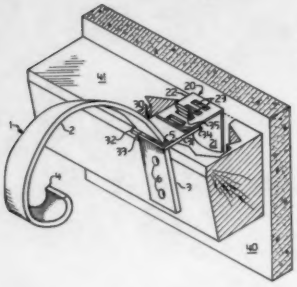


1. A conduit hanger comprising,
a first clamp member and a second clamp member positioned in opposed spaced relation,
each of said clamp members having a body portion including an engaging end portion for positioning on a structural support, a connecting end portion, and an intermediate portion,
said intermediate portion having an arcuate configuration extending between the engaging end portion and the connecting end portion and adapted to receive and support a conduit,
a moisture resistant, polymeric coating encapsulating said clamp member body portion,
a bore extending through said connecting end portion of each of said clamp members,
said coating forming a seal structure extending outwardly on opposed sides of each clamp member in surrounding relation with said bore,
said seal structure being telescopically movable to form an extensible sealed passageway between said first and second clamp members,
a fastening element connecting said first and second clamp members to move said connecting end portions toward one another to securely hold a conduit between said intermediate portions, and
said fastening element extending through said bores and positioned within said sealed passageway to provide a moisture resistant seal around said fastening element.

4,417,712
WALL BRACKET CONSTRUCTION
Damon H. DeHart, 31 Avon St., Wakefield, Mass. 01880
Filed Nov. 5, 1980, Ser. No. 204,306
Int. Cl.³ F16B *5/06*
U.S. Cl. 248—225.2 **11 Claims**

1. A wall bracket construction comprising:
an elongate bracket element having upper and lower end portions, said upper end portion being outwardly displaced from said lower end portion and having a hook for suspending an article therefrom;
a tang element comprising a vertical, downwardly oriented, tag member adapted to be inserted into the interface between a wall and wall molding affixed to said wall and a first transverse member extending outwardly and substantially horizontally from the upper end of said tang member;
a link element comprising a second transverse member, the outboard end of said second transverse member comprising slot means to receive the lower end portion of said bracket element;
one of said first or second transverse members comprising a plurality of spaced apart apertures therethrough along at least a portion of the length thereof and the other of said first

or second transverse members having at least one upturned projection adapted to engage any of said apertures of said one transverse member in interlocking relationship there-



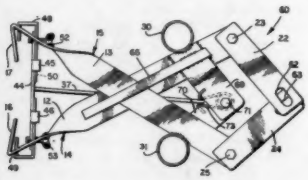
with, said bracket element further comprising stop means to prevent entry of said upper end portion thereof in said slot means of said link element.

4,417,713

SAFETY BELT CLAMP APPARATUS

Dennie C. Snowden, Dixon Mobile Home Pk., Lot #14, Leesburg, Ga. 31763, and Elwood D. Moree, Rte. 1, Vienna, Ga. 31092

Filed Oct. 28, 1980, Ser. No. 201,461
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—228 **5 Claims**



1. A clamp apparatus for releasably connecting a safety belt or harness to a beam, comprising:

a pair of arms pivotally connected intermediate the ends thereof and each defining at a first end thereof an inwardly turning hook member;

a pair of connecting members, one pivotally connected to a second end of each of said arms at one end of each of said connecting members, and defining therein adjacent to the other end of each of said connecting members a clip receiving opening;

a brace extending diagonally from the connection of said arms away from the plane of said arms in the direction of said hook members, said brace being connected to said arms for pivotal movement both about the axis of said pivotal connection between said arms and toward or away from said arms;

jaw means on said brace spaced apart from said arms for engaging said beam at a location spaced apart from the point at which said hook members engage said beam;

a pair of clip receiving rings, one attached to each of said arms between the second ends of said arms and the pivotal connection of said arms; and

a spring urging said hook members toward one another,

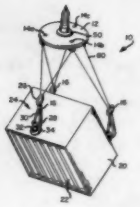
whereby a plurality of safety belt clips can be engaged with said clip openings and said rings, the force exerted on said belts causing said hook members to be urged against a beam therebetween.

4,417,714

HANGING DEVICE MOUNTING SYSTEM FOR DEVICES SUCH AS SPEAKER ENCLOSURES

Orrin Charm, 725 Lorraine Blvd., Los Angeles, Calif. 90005

Filed Jun. 29, 1981, Ser. No. 278,597
Int. Cl.³ B61L *11/02*
U.S. Cl. 248—323 **5 Claims**



1. A hanging device mounting system comprising:

a support plate having three support plate cord holders disposed thereon in a non-collinear relationship;

three device cord holders adapted to be secured to a device at three spaced-apart positions thereon distributed about the center of gravity of the device at locations selected to provide a stable hanging mounting for the device, the device cord holders each including a first mounting element that is securable to a device and a second mounting element removably coupled to the first mounting element, the second mounting element receiving the cord in a supporting relationship; and

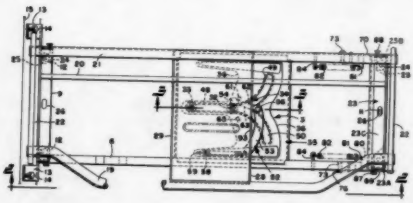
a cord connecting alternately the support plate cord holders and the device cord holders and being slidably coupled to at least all but one of the cord holder second mounting elements.

4,417,715

REVERSIBLE TRANSPORTATION SEAT

Robert L. Edwards, Mansfield, Ohio, assignor to National Seating Co., Mansfield, Ohio

Filed Mar. 5, 1981, Ser. No. 240,771
Int. Cl.³ F16M *13/00*; A47C *3/18*
U.S. Cl. 248—425 **13 Claims**



1. A reversible seat comprising a fixed lower frame; a guide plate carried by the lower frame having a Y shape slot therein, said Y shape slot including a stem section communicating with two divergent arcuate branch sections to form a Y configuration; a rotatable upper frame carrying a seat and having two spaced roller means fixedly mounted thereon, said roller means being received in the Y shape slot for selective movement therealong to connect the fixed frame to the rotatable frame for selective reversal of the seat; a pivotal switch lever positively to control the sequence of roller movement along the Y shape slot selectively to permit 180° rotation of the upper frame relative to the lower frame to reverse the seat orientation, the pivotal switch lever being generally L shape in configuration to define two arms respectively selectively associated with the

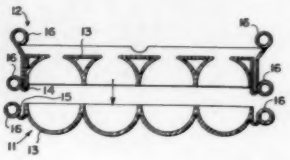
two branch sections of the Y shape slot; and locking means positively to secure the upper frame to the lower frame for seat use.

4,417,716

NOVELTY ICE TRAY

Americo Penna, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, c/o Americo Penna, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jan. 27, 1982, Ser. No. 343,098
Int. Cl.³ B29C *1/02*
U.S. Cl. 249—121 **2 Claims**



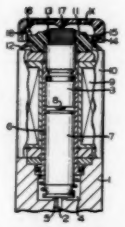
1. A novelty ice tray, comprising in combination, an upper and lower section, a plurality of hollow forms in each said section, lock means to secure said sections water tight together, and said forms of said sections aligning with each other, said forms being of various shape so that water frozen therein becomes a shaped ice cube, and means for a plurality of said ice cubes being frozen together, wherein said lock means comprises a U-shaped lock pin inserted tubes formed on said sections wherein an overflow pan is formed upon a top of said upper section.

4,417,717

PRESSURE RELEASE FOR A VALVE

Rudolf Möller, Gehrden, Fed. Rep. of Germany, assignor to WABCO Steuerungstechnik GmbH & Co., Hanover, Fed. Rep. of Germany

Filed Dec. 19, 1980, Ser. No. 218,399
Claims priority, application Fed. Rep. of Germany, Jan. 17, 1980, 3001538
Int. Cl.³ F16K *31/02*
U.S. Cl. 251—139 **12 Claims**



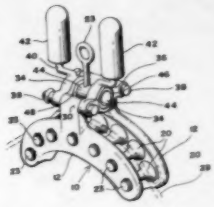
1. An electro-magnetic valve device comprising:
(a) a housing;
(b) an electro-magnetic coil in said housing;
(c) an air vent pipe secured to said housing at one end and projecting from said housing at the other end, said other end being threaded; and
(d) a nut threadedly connected to said other end of said air vent pipe and engageable with said coil to axially secure said coil in said housing, comprising:
(i) first annular seal means integral with said nut and projecting from the outer periphery thereof for engagement with said housing when said nut is threaded onto said air vent pipe; and
(ii) second annular seal means integral with said nut and projecting radially inwardly from the threads of said nut for engagement with said air vent pipe.

4,417,718

COUNTER BALANCED SHEAVE ASSEMBLY WITH MULTIPLE PULLEYS

Shale J. Niskin, 3415 Chase Ave., Miami Beach, Fla. 33140

Continuation-in-part of Ser. No. 222,970, Jan. 7, 1981, Pat. No. 4,301,995. This application Oct. 22, 1981, Ser. No. 313,758
Int. Cl.³ B66D *1/36*
U.S. Cl. 254—394 **8 Claims**



1. A counter-balanced sheave assembly for supporting a downward extending cable having a tension applied thereto, comprising:
a support frame;
a plurality of sheaves rotatably mounted to said support frame along a downwardly facing, arcuate path with their axis of rotation being substantially perpendicular to a plane containing said arcuate path;
counter-balancing means positioned above said support frame;
connecting means disposed between said counter-balancing means and said support frame for rigidly interconnecting the same;
suspension means pivotally connected to said connecting means with its pivotal axis being substantially parallel to said plane containing said arcuate path;
said suspension means including a first rotatable member, having said pivot axis, rotatably mounted at its ends to said connecting means, and a second rotatable member pivotally secured to said first rotatable member with its rotation axis being substantially perpendicular to said pivot axis of said first rotatable member, said second rotatable member being operable for supporting said counter-balanced sheave assembly;
whereby said plane containing said arcuate path at all times approximately passes through and lies parallel with the cable positioned over said sheaves.

4,417,719

TOP-AND-BOTTOM BLOWN CONVERTER

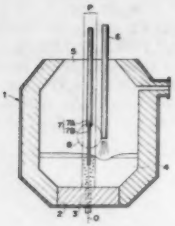
Kyoji Nakanishi; Tsutomu Nozaki, and Toshihiko Emi, all of Chiba, Japan, assignors to Kawasaki Steel Corporation, Hyogo, Japan

Filed Aug. 10, 1982, Ser. No. 406,960
Int. Cl.³ C21D *11/00*
U.S. Cl. 266—78 **8 Claims**

1. A top-and-bottom blown converter comprising:
a converter housing having a vertical axis and a horizontal trunnion axis about which the housing is rotatable and provided with an opening at the top, said converter housing receiving molten metal therein;
a plurality of tuyeres arranged at the bottom of said converter housing and aligned in a line extending parallel to said trunnion axis for blowing a gas into said molten metal;

a lance mounted for vertical motion into said converter housing through said opening for blowing an oxidizing gas into said molten metal; and

a monitoring sub-lance mounted for vertical movement into said converter housing through said opening such that a



lower tip of said sub-lance may be immersed in said molten metal for measurement, said sub-lance being mounted for said vertical movement within a region defined between two vertical planes passing through two parallel lines each horizontally spaced by a distance of 300 mm from said tuyere aligning line.

4,417,720

CONTINUOUS HEAT TREATMENT PLANT FOR STEEL SHEET

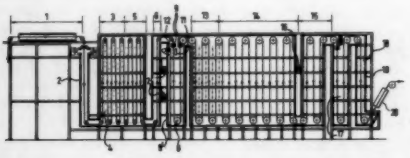
Philippe Paulus, Liege, Belgium, assignor to Centre de Recherches Metallurgiques, Brussels, Belgium

Filed Dec. 4, 1980, Ser. No. 213,196

Claims priority, application Belgium, Dec. 12, 1979, 880587; Luxembourg, Jul. 1, 1980, 82575

Int. Cl.³ C21D *9/56*

U.S. Cl. 266—112 **15 Claims**



1. A continuous heat treatment plant for steel sheet, comprising in sequence:

(a) means for heating the steel sheet to a temperature higher than the recrystallization temperature of the steel;

(b) means for holding the steel sheet at this temperature for more than 30 seconds; and

(c) a rapid cooling zone comprising

(i) means for spraying a cooling fluid onto the steel sheet, and

(ii) a tank for containing an aqueous bath, means for maintaining the aqueous bath at a temperature greater than 75° C., (1) means for varying the level of the aqueous bath in the tank, and (2) a roller contained within the tank around which the steel sheet passes and means for displacing said roller—so that the length of the path of the sheet through the aqueous bath can be modified by employing either or both of (1) and (2).

4,417,721

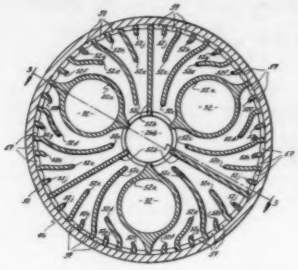
LANCE TIP FOR OXYGEN STEELMAKING

Robert D. Pehlke, 9 Regent Dr., Ann Arbor, Mich. 48104; D. Roger Glass, 1575 Earhart Rd., Ann Arbor, Mich. 48105; Lyle J. Johnson, deceased, late of Grosse Ile, Mich., and by Evelyn Johnson, administratrix, East River Rd., Grosse Ile, Mich. 48138

Filed Jun. 4, 1982, Ser. No. 384,843

Int. Cl.³ C21C *5/32*

U.S. Cl. 266—225 **15 Claims**



1. In an oxygen lance tip for steelmaking having an oxygen passage terminating in one or more oxygen outlets at the distal end face of the tip, and a coolant passage via which coolant is circulated through the tip, the improvement in said coolant passage for cooling the distal end face of the tip which comprises: means defining a plurality of coolant channels just interior of the distal end face, said channels being constructed and arranged to radiate from a central region of the tip toward the outer perimeter of the tip so that coolant flow across said distal end face radiates from said central region, said channels being axially bounded by said distal end face and by a wall surface spaced axially inwardly of said distal end face, and said channels being defined by a plurality of axial ridges extending between said wall surface and said distal end face and arranged and constructed to run generally radially and successively circumferentially subdivide the radiating coolant flow at least once after it has been axially confined by said wall surface and said distal end face as it radiates in the direction from the central region of the tip toward the outer perimeter of the tip.

4,417,722

VACUUM FURNACE FOR HEAT TREATMENT

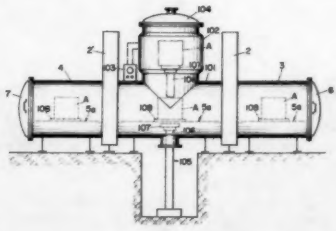
Hiroshi Ishii, Tokyo; Hiroshi Morii, and Saburo Ishijima, both of Yokohama, all of Japan, assignors to Japan Oxygen Co., Ltd., Tokyo, Japan

Filed Jun. 9, 1982, Ser. No. 386,797

Claims priority, application Japan, Dec. 23, 1980, 55/182679

Int. Cl.³ C21D *1/74*; F27B *9/14*

U.S. Cl. 266—250 **6 Claims**



1. A vacuum furnace for heat treatment comprising a heat-

ing furnace proper, pre-exhaust chambers, one adapted to feed a workpiece into the furnace proper therefrom and the other adapted to discharge the workpiece out of the furnace proper thereinto, vacuum valves for partitioning between the furnace proper and the respective pre-exhaust chambers, and a line assembly for delivery of the workpiece from the feed chamber into the discharge chamber through the furnace proper, wherein a heating chamber forming part of said furnace proper is raised above said delivery line assembly, and an externally operable elevating means is disposed in said furnace proper, said workpiece being carried by said delivery line assembly, and being lifted to said heating chamber where it is heated.

4,417,723

TUYERE FOR BLOWING GASES INTO MOLTEN METAL BATH CONTAINER

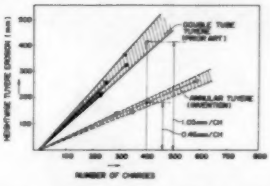
Minoru Kitamura, Nishinomiya; Shinji Koyama; Shuzo Ito, both of Kobe; Masahiko Ohgami, Kakogawa; Hideo Matsui, Hyogo; Isamu Hirose, Kakogawa; Hideaki Fujimoto, Akashi, and Tsuyoshi Yasui, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 4, 1982, Ser. No. 336,685

Claims priority, application Japan, Oct. 22, 1981, 56-169465

Int. Cl.³ C21B 7/16

U.S. Cl. 266—265 **8 Claims**



1. A tuyere having a longitudinal axis, said tuyere for blowing a gas therethrough to be embedded in a bottom or side wall of a molten metal bath container, said tuyere comprising:

a cylindrical core body which further comprises a solid refractory material having a first outer diameter and located at the center of said tuyere coaxially with respect to said longitudinal axis;

a first tube having a second outer diameter and fixed coaxially around and immediately adjacent said core body and forming a first continuous annular gap having a first width forming a first annular blowing passage;

means for reducing erosion of said wall of said molten metal bath container adjacent said tuyere; and

means for stabilizing a flow rate of said gas through said tuyere over a wide range of said flow rate.

4,417,724

BRAKE ASSEMBLIES PRIMARILY FOR EXERCISING APPARATUS

Anthony Bikker, West Midlands, England, assignor to Welltron Limited, West Midlands, England

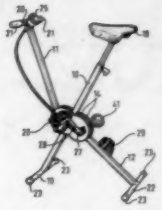
Filed Sep. 22, 1980, Ser. No. 189,233

Claims priority, application United Kingdom, Sep. 22, 1979, 7932949

Int. Cl.³ A63B 21/22

U.S. Cl. 272—73 **4 Claims**

1. An exercising apparatus comprising a frame, rotary means turnable by a person's legs or arms to rotate a spindle, bearing means for supporting the spindle for rotation on the frame and braking means operable to apply resistance to turning of the spindle, wherein the bearing means comprise two components which have concave part-cylindrical bearing faces engaging a cylindrical portion of the spindle at diametrically opposed locations and are relatively movable towards and away from one another along a line passing through said locations and the axis of the spindle, the spindle being supported soley by the two components, wherein the two components are mounted in a housing which is fixed to the frame and carries the braking means, one component is acted upon by the braking means at



a location lying on said line to apply a force to said one component in a direction along the line to move the component relative to the housing towards the other component to urge the bearing faces of the two components into engagement with the spindle, the bearing faces of the components being formed to provide resistance to turning of the spindle when urged into engagement with said portion thereof whilst at the same time providing a bearing for the spindle and said other component having projections received in holes in the housing to locate the component with respect to the housing.

4,417,725

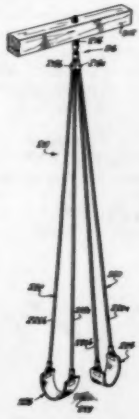
METHOD FOR TRANSFERRING ENERGY BETWEEN SUSPENDED OBJECTS

John W. Van Horn, 2953 Waterfield Dr., Sparks, Nev. 89431

Filed Oct. 19, 1981, Ser. No. 312,242

Int. Cl.³ A63G 9/00

U.S. Cl. 272—85 **2 Claims**



1. The method of transferring energy and motion between two suspended objects which comprises: Suspending a first object at a predetermined distance above a base level from a single point; suspending a second object at a predetermined distance above a base level from said single point and at the same level as said first object; providing a swiveled connection

at the common junction of said first and said second objects; imparting a circular motion to the first of said suspended objects above the said second suspended object; causing said first suspended object to increase its speed and orbit about the second suspended object for a period of time; causing the second suspended object to obtain motion from the first suspended object to lose momentum and motion by transferring from its suspension means its kinetic energy to the second object; causing the second object to increase its momentum and transfer of kinetic energy from the first until the first comes to rest with the second still in motion.

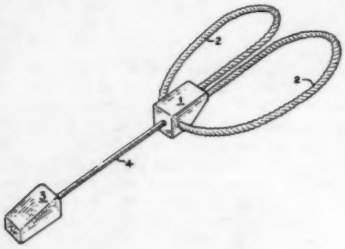
2. The method as set forth in claim 1 wherein said first and second suspended objects are swings for supporting persons.

4,417,726

FOOT HOLDDOWN DEVICE FOR PERFORMING SITUPS

William J. Schleis, 2420 Ascension Dr., San Ramon, Calif. 94583

Filed Apr. 22, 1982, Ser. No. 352,137
Int. Cl.³ A63B 23/00
U.S. Cl. 272—93 3 Claims



1. A physical fitness exercising device specifically designed to support a users feet while engaged in performing exercises performed from a position flat on the back to a sitting position said device comprising;

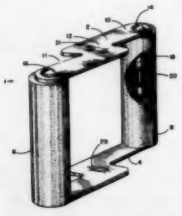
a pair of side-by-side loops of flexible rope secured within a central connector block, each loop forming a stirrup which is adapted to receive the foot of a user, a flexible connecting means secured at one end to said connector block and at its opposite end to an anchor block, said anchor block and connecting means being adapted to be secured under a door or clamped under on article of furniture while the user performs sit-up type exercises with a foot in each stirrup.

4,417,727

ISOMETRIC EXERCISER

Charles J. Ottenheimer, 205 Lewers St., Suite 808, Honolulu, Hi. 96815

Filed Feb. 11, 1982, Ser. No. 348,030
Int. Cl.³ A63B 21/00
U.S. Cl. 272—125 5 Claims



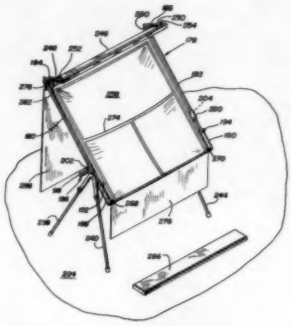
1. Isometric exercise apparatus comprising a pair of hand grips, a pair of parallel Z-shaped rigid spacng bars having end portions thereof attached to each hand grip, and orientation means on at least one of said spacing bars for assisting the user in orienting the apparatus in various positions with respect to the user's body when performing various isometric exercises.

4,417,728

TRAINING APPARATUS FOR RACKET SPORTS

Eric Hay, Johanneshov, and Anders Nordstrom, Kungsangen, both of Sweden, assignors to Esselte Studium AB, Stockholm, Sweden

Continuation-in-part of Ser. No. 252,979, filed as PCT SE80/00045, Feb. 13, 1980 published as WO80/01650, Aug. 21, 1980, §102(e) date Apr. 29, 1980. This application May 6, 1980, Ser. No. 147,233
Int. Cl.³ A63B 69/38
U.S. Cl. 273—29 A 11 Claims



1. A training apparatus for racket sports such as tennis, squash, or the like comprising:

(a) elongated frame means having two mutually parallel frame members each having upper, upper distal and lower ends, and a principal segment between said upper and lower ends, said members being curved at their upper ends;

(b) a rigid rebound surface disposed across the width of said frame means at the upper distal ends of said frame members, said rebound surface being spaced vertically apart from and substantially parallel to a plane joining said principle segments;

(c) a flexible material, having upper and lower edges and longitudinal edges perpendicular thereto, attached to said rigid rebound surface, extending loosely across the width of said frame, said flexible material being relatively taut along the length of said frame and attached to the lower ends of said frame members, said upper edge being disposed rearwardly of said lower edge;

(d) horizontal support means connected to said frame means;

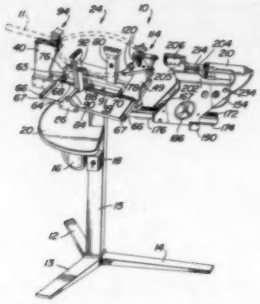
(e) means disposing said frame means and thus the said flexible material at diffrent angles to said horizontal support means;

whereby the kinetic energy of a ball struck against the flexible material will be partially absorbed, the ball caused to run upwardly and rearwardly and hit the rigid rebound surface and be deflected downwardly backby said rebound surface towards the player.

4,417,729
RACKET STRINGING APPARATUS

Ross F. Morrone, Jamesburg, N.J., assignor to Prince Manufacturing, Inc., Princeton, N.J.

Filed Feb. 26, 1982, Ser. No. 352,820
Int. Cl.³ A63B 51/14
U.S. Cl. 273—73 A 22 Claims



1. A racket stringing apparatus comprising:
(a) a base,
(b) a racket frame clamp assembly pivotably mounted on the base and adapted to clamp a racket to be strung,
(c) a tension head support beam having a first end and a second end, the first end of the beam being mounted on the base,
(d) a tension head assembly mounted for reciprocating movement along the beam and for limited pivotable movement about an axis transverse to the beam and transverse to the plane of the tension head assembly and adjacent a lower portion of the tension head assembly closest to the first end of the beam,
(e) driving means for continuously maintaining a predetermined final tension on a string with which the racket is to be strung, the driving means being activated by an actuator means which is activated upon sensing a predetermined initial string tension,
(f) means for regulating the tension on a string, and
(g) means for indicating the tension on the string,
the tension head assembly including a body, means for reciprocating the tension head assembly along the beam, locking means for locking the tension head assembly against movement along the beam, string gripping means mounted for reciprocating movement along a top portion of the body, the string gripping means being connected to the driving means, whereby when a sufficient initial tension is placed on the string held in the string gripping means as the body is moved in a direction toward the second end of the beam by the means for reciprocating the tension head assembly, the tension head assembly pivots about the transverse axis in a direction toward the first end of the beam, the pivoting simultaneously causing the locking means to interact with the beam to prevent reciprocating movement of the tension head assembly along the beam and the pivoting further simultaneously causing the actuator means to activate the driving means to apply and maintain the predetermined final tension on the string until the driving means is deactivated.

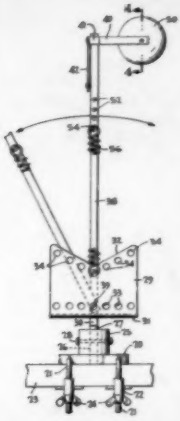
4,417,730
TENNIS PRACTICE APPARATUS

Todd D. Weiner, 628 Binsted Rd., Glen Burnie, Md. 21061

Filed May 3, 1982, Ser. No. 374,296
Int. Cl.³ A63B 61/00
U.S. Cl. 273—29 A 10 Claims

1. Apparatus for moving a ball to be struck by a racket for practice comprising

elongate arm means having a mounting end and a target end carrying a ball to be struck by a racket;
support means pivotally mounting said arm means at said mounting end to permit said target end to move through a stationary position in opposite directions and limiting pivotal movement of said arm means to less than 360°; and
spring means connected at a first end with said arm means and at a second end with said support means at a position spaced from said mounting end of said arm means, said

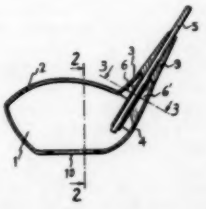


spring means being aligned along said arm means to bias said arm means toward said stationary position such that pivotal movement of said arm means in a first direction from said stationary position tensions said spring means to bias said arm means to move in a second direction opposite to said first direction whereby striking of said ball carried on said target end of said arm means with a racket causes said ball to oscillate about said stationary position for striking again with the racket while said ball is moving.

4,417,731
HOLLOW METAL GOLF CLUB HEAD AND CLUB INCORPORATING IT

Kunio Yamada, 5-14, 4 chome, Hibarigaokakita, Houya-shi, Tokyo-to, Japan

Filed Jun. 16, 1982, Ser. No. 389,081
Int. Cl.³ A63B 53/04, 53.08, 53.02
U.S. Cl. 273—167 H 12 Claims



1. A golf club head comprising: a hollow metal body portion having an external shape substantially similar to a conventional "wood", said head further including a hollow neck portion extending from said body portion, cylindrical socket means extending from said body portion, cylindrical socket means extending into said portions, a plurality of web means attached to and interconnecting said socket means and said neck portion

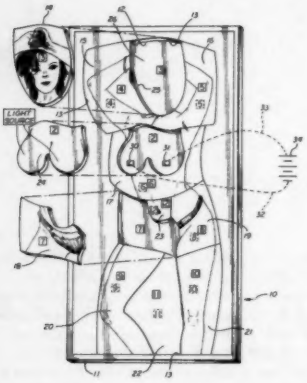
to support said socket means, with a spacing extending substantially around said socket means, said socket means having an aperture aligned with said neck portion to receive a shaft.

4,417,732

ELECTRICAL CONSTRUCTION GAME

Andrew J. Guill, Rte. 3, Box 746, Houston, Tex. 77045

Filed May 8, 1981, Ser. No. 261,898
Int. Cl.³ A63F 3/00
U.S. Cl. 273—238 6 Claims



1. A competitive puzzle-game for play by a plurality of players comprising

at least one game board of substantial thickness and having a recessed area comprising a flat portion surrounded by a peripheral edge defining the outline of the outer periphery of said puzzle and inner markings in said flat recessed portion outlining the location of eleven separate playing pieces,

each marked area for play of a jig saw puzzle piece bearing a selected number,

eleven playing pieces for said board,

each of said pieces having a shape fitting a selected marked area on said board and bearing a number corresponding to the number on such area,

a pair of dice for use by each player for generating random numbers from two to twelve, and

said pieces are played competitively by a player on said board according to numbers generated by said dice in the order of numbers from three to twelve and finally piece number two,

each player being allowed a selected number of throws of said dice to produce the number of the piece to be played, after which he loses his turn,

playing piece numbered two, the last piece to be played includes at least one signal light, and

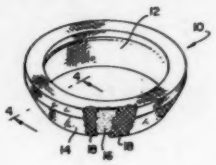
said board includes electric circuit means in said recessed area marked area number two cooperable with said puzzle piece number two to energize said light, whereby the rolling of the number two, having the lowest probability, results in completion of the board and illuminates the light.

4,417,733

METHOD OF PRODUCING HIGH TEMPERATURE COMPOSITE SEAL

Peter P. Usher, Union, N.J., assignor to Metex Corporation, Edison, N.J.

Continuation of Ser. No. 949,580, Oct. 10, 1978, abandoned, which is a continuation-in-part of Ser. No. 856,174, Nov. 30, 1977. This application Nov. 5, 1980, Ser. No. 203,557
Int. Cl.³ F16J 15/12; B32B 31/06
U.S. Cl. 277—1 3 Claims



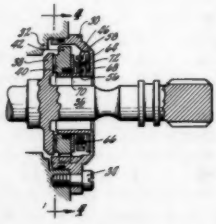
1. A method of producing a substantially coherent high temperature composite seal comprising the steps of positioning a sheet of flexible refractory sheet material between two layers of knitted wire mesh, said wire mesh being formed of wire and having voids of given size between said wires, constructing a generally cylindrical preform of said flexible refractory sheet material and flexible knitted wire mesh, disposing said preform in a compression die, said die having a cavity size and shape which is substantially the same as the desired composite seal, and applying an axial load to said preform, said load being of sufficient force to collapse said preform to substantially the size and shape of said composite seal and to cause said refractory material to substantially fill the openings in said wire mesh and to become firmly interlocked with said wire mesh.

4,417,734

SHAFT SEAL ASSEMBLY HAVING UNIVERSAL WASHER WITH BORES FOR SPRINGS

Jack G. Sundberg, Meriden, Conn., assignor to Chandler Evans Inc., West Hartford, Conn.

Filed Apr. 27, 1983, Ser. No. 489,019
Int. Cl.³ F16J 15/34
U.S. Cl. 277—93 SD 4 Claims



1. In an improved shaft seal assembly for a pump having a pump housing and a drive shaft with a seal face extending therein of the type comprising: a seal housing mounted upon the front of the pump housing in surrounding relationship to the drive shaft, a carbon face seal, having its rear face in wiping engagement with the seal face, mounted in the seal housing for axial movement therein; a universal washer having two protuberances on each side thereof in diametrically opposed relationship mounted in the seal housing between the rear face of the carbon face seal and the front inner wall of the seal housing; and wherein the improvement comprises:

first and second bores extending respectively through the protuberances on one side of the universal washer;

first and second compression springs respectively mounted in the first and second bores; and

means for engaging the extremities of the first and second springs for transmitting the urging thereof to the carbon face seal.

4,417,735

SEAL RING WITH TRAPEZOIDAL CONTOUR AND SPREADING ELEMENT

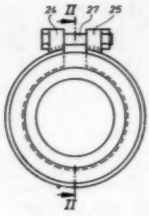
Kurt Heisler, Tetnang, Fed. Rep. of Germany, assignor to MTU Motoren-Und-Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Dec. 18, 1980, Ser. No. 217,833

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1979, 2950837

Int. Cl.³ F16J *15/06*; F16L *25/00*

U.S. Cl. 277—101 **40 Claims**



1. A sealing element adapted to be located between two adjacent components which are rigid with respect to one another, each of the components including an opening terminating in a sealing surface, the sealing surfaces being disposed in opposition to and spaced from one another, characterized in that a sealing ring is disposed between the two sealing surfaces, the ring includes a trapezoidal inner contour which opens toward an outside, and in that means are interposed between inner surfaces of the sealing ring for spreading outside surfaces of the sealing ring against the respective sealing surfaces.

4,417,736

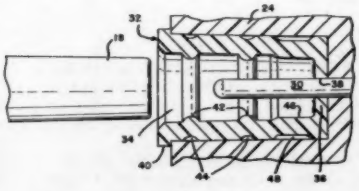
HIGH VOLTAGE RACK AND PANEL CONNECTOR

Henry O. Herrmann, Jr., Mt. Joy, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 869,974, Jan. 16, 1978, abandoned. This application Oct. 26, 1978, Ser. No. 954,954

Int. Cl.³ H01R *13/52*

U.S. Cl. 277—212 R **8 Claims**



1. An improved sealing means for high voltage electrical connectors to provide sealing interfaces between a tubular portion of one rigid mating connector member received in a corresponding cylindrical recess of a mating rigid connector member, said sealing means comprising:

a unitary member of resilient material having a substantially cylindrical configuration and adapted to be received within said recess of said mating connector member and accept said tubular portion therein,

at least one inwardly directed annular recess formed on the exterior of the sealing means,

an inwardly directed annular portion at one end of said member defining an aperture of lesser diameter than the remainder of the cylindrical configuration, said annular portion having substantially the same width as said annular recess,

whereby said at least one annular recess allows for deformation and expansion of said member and said reduced diameter portion without lessing the sealing effect achieved by said sealing means.

4,417,737

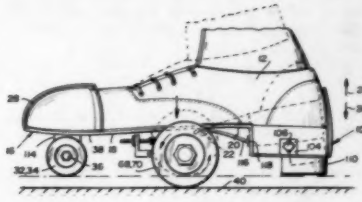
SELF-PROPELLED ROLLER SKATE

Hyman Suroff, 6813 21st Ave., Brooklyn, N.Y. 11204

Filed Sep. 13, 1982, Ser. No. 416,925

Int. Cl.³ A63C *17/12*

U.S. Cl. 280—11.115 **11 Claims**



1. A self-propelled roller skate for affixment to an individual's shoe comprising, in combination:

A. an articulated frame having a front portion and a rear portion, said front and rear portions being coupled by a hinge means for providing movement in a vertical plane therebetween, said front portion including:

(i) a forward toe portion adapted to receive and cooperate with the toe of a shoe removably retaining said shoe toe therein,

(a) wheel means rotatably affixed to the underside of said forward toe portion;

(ii) a central, generally horizontal section of said toe portion having means thereon for providing affixment to the sole of said shoe, said central section including;

(a) a pair of downwardly extending arms provided with apertures at the distal ends thereof,

(b) spring retaining means disposed on the underside of said central section,

(c) a rearwardly extending section having said hinge means at one distal end thereof, said rearwardly extending section being provided with pivot means on the underside thereof disposed between the distal ends of said rearwardly extending section,

(d) a ratchet rack pivotable in said pivot means and extending downwardly, with the teeth of said rack disposed rearwardly,

(e) a first spring means having one end affixed to said underside of said central section with the other end thereof positioned to urge said ratchet rack rearwardly,

(f) a generally U-shaped bracket means having a vertically extending base portion and horizontally disposed arm portions, said arm portions being disposed rearwardly and being provided with apertures adapted to cooperate with said apertures provided on said pair of said downwardly extending arms to form a pivot point, said U-shaped bracket base portion being provided with spring retaining means; and

B. a rear portion having means to cooperate with the rearwardly extending section of said forward toe portion to form said hinge means; said rear portion further including;

(i) a heel section adapted to receive the heel of an individual's shoe,

(ii) retaining means disposed in said heel section for removably clamping the heel of said shoe and retaining it therein, and

(iii) braking material disposed on the underside of said heel section for coming into contact with a surface upon which said skate is used, to provide braking; and

C. a pair of wheels disposed on the distal ends of an axle, said axle having a centrally disposed ratchet gear thereon, said axle and wheels being rotatably mounted proximate the distal ends of said horizontally disposed arm portion of said U-shaped bracket means with said ratchet gear being in intimate contact with said ratchet rack for cooperation therebetween; and

D. a second spring means connected between said U-shaped bracket base portion spring retaining means and said spring retaining means provided on the underside of said central frame section, said second spring means urging said U-shaped bracket base means towards said central frame section, said rack causing said gear and said pair of wheels to rotate in a forward direction on said surface when the weight of said individual is placed on said central frame section.

4,417,738

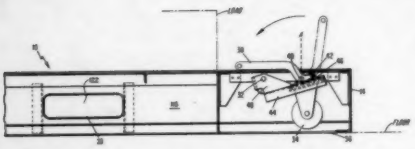
RETRACTABLE CASTER ASSEMBLY HAVING A LEVER IN ROLLING ENGAGEMENT WITH A PRESSURE PLATE

Ray Kendall, Fort Worth, Tex., assignor to Dynalectron Corporation, McLean, Va.

Filed Dec. 22, 1980, Ser. No. 218,826

Int. Cl.³ B60B *33/06*

U.S. Cl. 280—43.17 **8 Claims**



1. A retractable caster assembly for permanent attachment to a framework for allowing said framework to rest on a floor surface in a first stable position of the assembly, and for lowering the assembly and thereby raising at least one end of the framework above said floor surface in a second stable position of the assembly, the assembly comprising:

(a) a hinge plate pivotally mounted at one end to said framework;

(b) a pressure plate affixed to said hinge plate at the opposite end of said hinge plate from said pivotal mounting;

(c) a caster rotatably mounted on the lower surface of said pressure plate and said hinge plate positioned so that on lowering said assembly said caster extends below the lower surface of said framework and, on raising said assembly, the lower periphery of said caster is not lower than the lower surface of said framework and is out of contact with said floor surface;

(d) a lever having a fulcrum point pivotably mounted on said framework, said lever having a handle portion above said fulcrum point and an engagement point below said fulcrum point, said engagement point including a roller rolling along and against the upper surface of said pressure plate to lower said caster upon raising said handle portion of said lever, said engagement point of said lever acting directly on said pressure plate through said roller;

and

(e) means mounted on the upper surface of said pressure plate for restricting the travel of said roller between a point where said caster is in a fully lowered stable position supporting at least a portion of said pallet wherein said fulcrum point, said roller and the center of said caster are in substantially vertical alignment, and a point where said caster is in a fully raised position.

4,417,739

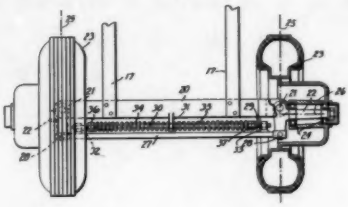
AUXILIARY WHEEL SUPPORT FOR LOAD CARRYING VEHICLES

Robert F. Whitaker, 1304 N. Council Ave., Ontario, Calif. 91764

Filed Dec. 9, 1981, Ser. No. 280,070

Int. Cl.³ B62D *61/12*

U.S. Cl. 280—81 A **2 Claims**



1. An auxiliary support for a vehicle having a frame structure for supporting a load, said frame structure including an axle extending transversely of said vehicle, rear support wheels, auxiliary wheels located rearwardly of said rear wheels, spindles supporting said auxiliary wheels for rotation about wheel axes, pivot means on said structure supporting said spindles for pivotal movement about vertical axes located forwardly of said wheel axes whereby to enable said wheels to caster about said vertical axes, means on said axle supporting said pivot means, and a tie rod connected between said spindles, comprising:

stressed spring means extending between said tie rod and said frame structure for yieldably maintaining said wheels in tracking relation with said vehicle and for yieldably resisting said pivotal movement of said auxiliary wheels about said vertical axes;

a projection on said axle intermediate the ends thereof, said projection having a hole therein;

a guide rod movable endwise in said hole; and

means attaching said guide rod to said tie rod;

said spring means comprising a pair of compression springs slidable on said guide rod, adjacent ends of said spring means engaging said projection; and

said guide rod having means thereon engaging the opposite ends of said springs whereby to maintain said springs in compression.

4,417,740

VEHICLE FOR COASTING DOWN IN A CHANNEL-SHAPED ROLLER SLIDE

Hans G. Wechsler, Schwaz, Austria, assignor to Horst Schwamm, Sistrans and Friedbert Pessei, Grinzens, both of, Austria

Filed Apr. 28, 1981, Ser. No. 258,275

Claims priority, application Austria, May 5, 1980, 2371/80

Int. Cl.³ A63G *21/02*

U.S. Cl. 280—87.01 **8 Claims**

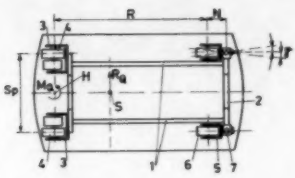
1. A vehicle for use in coasting down a non-rail roller slide of the type having a channel-shaped curved transverse cross-sectional configuration and having straight and curved length sections, with such curved length sections having banked outer sides, said vehicle comprising:

a vehicle chassis including at least one longitudinal member having rigidly fixed to front and rear ends thereof respective front and rear transverse cross members, each said cross member having a transverse configuration curved to

conform generally to the transverse configuration of the slide on which said vehicle is to be used;

rear wheels mounted for rotation by respective rear axles mounted in fixed alignment with respect to said rear cross member;

a pair of supporting members, each said supporting member having a rearwardly extending generally fork-shaped portion supporting an axle of a respective front wheel and a forwardly extending mounting portion pivotally mounted to a respective opposite end of said front cross member for rotation about a respective pin extending generally orthogonal to said axle of said respective front wheel, such that said front wheels are mounted with



caster with respect to said front cross member, and such that said front wheels and respective said supporting members are pivotable about said respective pins with respect to said front cross member;

stop means on said chassis and on each of said supporting members for limiting the extent of pivotal movement of each of said front wheels with respect to said front cross member; and

said rear wheels and said front wheels being mounted with reverse camber, the camber angle of each said wheel being equal to the angle between the horizontal and a tangent to the point of contact of said wheel to the slide on which said vehicle is to be used.

4,417,741

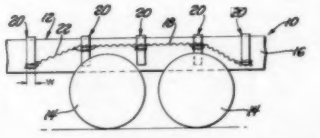
PORTABLE DEFLECTOR SHIELDS

Benjamin Ciocan, 29154 Campbell Dr., Warren, Mich. 48093

Filed Jan. 18, 1982, Ser. No. 339,919

Int. Cl.³ B62D *25/16*; A47B *96/00*

U.S. Cl. 280—154.5 R **9 Claims**



1. In a vehicle that includes a frame and ground wheels located outboard from the frame so that the space directly above and behind a given wheel is free to receive mud or debris discharged by the wheel: the improvement comprising a portable add-on fender adapted to occupy the aforementioned space for intercepting and deflecting the mud and/or debris; said fender comprising a number of separately-formed brackets adapted to occupy different stations along the frame; each bracket comprising a hook section adapted to hook over the frame to preclude removal of the bracket in a first direction, a clamping section adapted to engage the frame to preclude removal of the bracket in a second direction, and a support arm section directed horizontally outwardly from the hook section and normal to the longitudinal axis of the vehicle frame when the bracket is in its installed position; said fender further comprising a fabric element having a longitudinal dimension corresponding to the spacing of the brackets along the vehicle frame and a width dimension corresponding to the transverse distance between the frame and the outboard edges of the ground wheels; said fabric element having a series of relatively narrow pockets extending along the width dimension of the element to fit onto the support arm sections of the brackets.

4,417,742

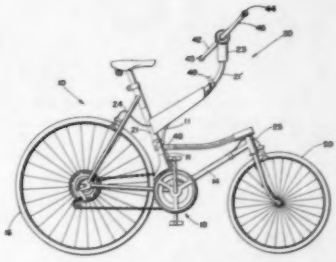
MANUPEDAL BICYCLE

Franklin S. Intengan, P.O. Box 4058, Hialeah, Fla. 33014

Filed Jun. 10, 1981, Ser. No. 272,361

Int. Cl.³ B62M *1/00*

U.S. Cl. 280—234 **6 Claims**



1. A bicycle comprising a main frame, a rear wheel assembly rotatably mounted on said main frame in supporting relation thereto, a foot operated crank assembly drivingly interconnected to said rear wheel assembly; said main frame including a front fork member pivotally mounted thereto and a front wheel assembly rotatably attached to said front fork in supporting relation to said main frame, said main frame further including a steering arm assembly movably mounted on said frame and including a pivot axis coincident to the central axis of a seat post of said main frame; means interconnecting said steering arm assembly and said front fork member, a manual crank assembly secured to said steering arm assembly so as to move therewith and rotatable about a central crank axis thereof, said crank assembly spaced outwardly from said pivot axis, said manual crank assembly structured and disposed for driving rotational operation by the hands of an occupant and further being drivingly interconnected to at least one of said front wheel and rear wheel assemblies, said manual crank assembly structured and disposed to maintain a substantially parallel relation between said crank axis and an imaginary line connecting the occupant's shoulders during operative rotation of said manual crank assembly, whereby propulsion of said bicycle may be accomplished by hand operation of said manual crank assembly by occupant.

4,417,743

SELF ORIENTABLE VEHICLE PROPELLED BY A SYSTEM OF PEDALS ACTUATING A CHAIN

Yves Garel, Champ-la-Lioure, 07210 Chomerac, France

Filed Jun. 18, 1981, Ser. No. 275,120

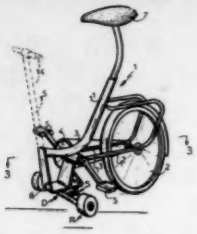
Claims priority, application France, Jun. 25, 1980, 80 14581; Aug. 8, 1980, 80 18078

Int. Cl.³ B62K *5/04*

U.S. Cl. 280—266 **8 Claims**

1. A velocipede comprising a frame, a seat mounted on said frame, a pedal bracket secured to said frame and rotatably mounting pedals about a pedal axis, chain and sprocket transmission means drivingly connecting said pedals to a single driving wheel, said single driving wheel being rotatable about a wheel axis disposed at the rear of said frame, a roller assembly mounted on said frame comprising relatively small diameter roller means rotatable about a roller axis, said roller axis being disposed lower than said pedal axis and said wheel axis, said pedal axis being disposed longitudinally between said roller axis and said wheel axis and adjacent said roller axis,

means for articulating said roller assembly forwardly of said roller axis about an inclined articulation axis for enabling the



rider to lean the velocipede laterally to either side of a longitudinal plane for controlling the direction of movement of the velocipede.

4,417,744

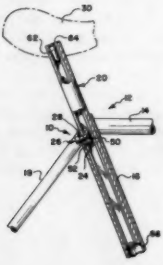
BICYCLE SEATPOST ASSEMBLY

Kenneth J. Spear, St. Marys, Ohio, assignor to Huffy Corporation, Miamisburg, Ohio

Filed Apr. 2, 1982, Ser. No. 364,718

Int. Cl.³ B62K *19/36*

U.S. Cl. 280—281 R **4 Claims**



1. In combination with a tubular seat mast of a bicycle defining a radial hole through an upper rearward wall, a bicycle seatpost assembly comprising:

a cylindrical seatpost sized to telescope within said bicycle seat mast, said seatpost defining a longitudinal slot having side walls forming opposing channels;

means positioned within said slot and slidably engaging said opposing channels for threadingly receiving a bolt; and

a threaded bolt extending through said radial hole in said rearward seat mast wall and into said slot to threadingly engage said bolt receiving means, said bolt having a head whereby said bolt may be threaded into said bolt receiving means to clamp a portion of said seatpost and a portion of said seat mast between said sliding means and said bolt head.

4,417,745

FOLDING BICYCLE

Robert D. Shomo, 22303 Fairfax, Taylor, Mich. 48180

Filed Mar. 16, 1981, Ser. No. 243,896

Int. Cl.³ B62K *15/00*

U.S. Cl. 280—287 **27 Claims**

3. A folding bicycle which includes a folding frame, front and rear wheels operatively mounted on the frame, a handlebar assembly, a seat mounted on the frame, a crankset with a pair of pedals and sprocket and a chain drive apparatus, characterized in that the folding frame includes:

(a) a frame front portion;

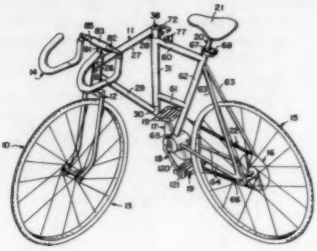
(b) a frame rear portion;

(c) hinge means forming a part of the frame front portion;

(d) means connecting said hinge means to said frame rear portion;

(e) said frame front portion includes a plurality of interconnected tubes;

(f) said hinge means includes a swingably mounted hinge tube as one of the frame front portion plurality of tubes;



(g) said hinge means includes an upper bushing and a lower bushing carried in said hinge tube, and means inside of said hinge tube for interconnecting said bushings;

(h) said means inside of said hinge tube for interconnecting said bushings includes means for exerting a tension on the bushings and a compression on said hinge tube; and,

(i) said hinge means includes means for releasably attaching each of said upper and lower bushings to one of the other tubes on said frame front portion.

4,417,746

KICKSTAND FOR A MOTORCYCLE

Günter Baron, Neuestubg, Fed. Rep. of Germany, assignor to Bayerische Motoren Werke AG, Fed. Rep. of Germany

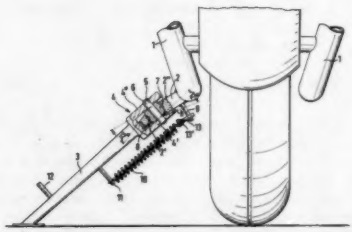
PCT No. PCT/EP81/00035, § 371 Date Jan. 4, 1982, § 102(e) Date Jan. 4, 1982, PCT Pub. No. WO81/03155, PCT Pub. Date Nov. 12, 1981

PCT Filed Apr. 30, 1981, Ser. No. 339,451

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016865

Int. Cl.³ B62H *1/02*

U.S. Cl. 280—301 **5 Claims**



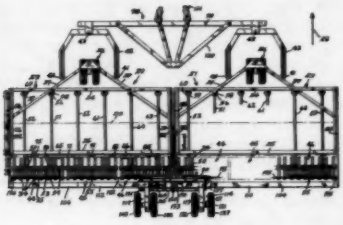
1. A kickstand device for a motorcycle comprising a kickstand and means for articulating said kickstand to a frame of the motorcycle so that the kickstand is swivelable against the action of at least one spring from a swung-in travel position through a dead center point of the springs into a swung-out parking position with the free end of the kickstand, in the parking position, being displaceable upward relative to the motorcycle against the force of the springs over a limited angle range, characterized in that the kickstand is in contact with the ground in the lower extreme position of the angle range when the motorcycle is in a vertical position.

4,417,747

AGRICULTURAL TRANSPORTER

Gerald T. Johnson, Kulm, N. Dak. 58456

Continuation-in-part of Ser. No. 107,447, Dec. 26, 1979, Pat. No. 4,272,092. This application May 7, 1981, Ser. No. 261,505
The portion of the term of this patent subsequent to Jun. 9, 1998, has been disclaimed.
Int. Cl.³ B60D 1/00
U.S. Cl. 280—405 B 5 Claims



1. A transporter apparatus for a plurality of transversely elongated agricultural drills with gangs of press wheels, said drills including generally side by side frame assemblies each having a front and a back, said transporter apparatus comprising:

frame means;

means for attaching said frame means to the back of at least one said drill frame assembly;

wheel means for moveably supporting a portion of the back of said plurality of drills;

means for mounting said wheel means to said frame means for linear, vertical movement relative thereto;

means for releasably holding said frame assemblies of said plurality of drills at a constant vertical height relative to one another;

means for yieldably securing said gangs of press wheels of said plurality of drills at an approximately constant vertical height with respect to each other and with respect to said frame assemblies; and

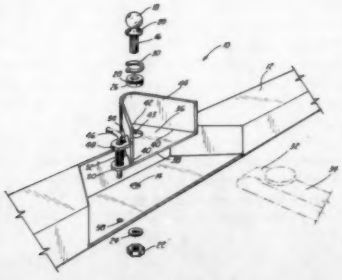
means for powering said mounting means and said holding means in sequence between drill operative and transport positions.

4,417,748

TRAILER SWIVEL HITCH GUIDE

Laurence E. Dortch, 400 W. Central, Apt. 512, Wichita, Kans. 67203

Filed Feb. 4, 1982, Ser. No. 339,744
Int. Cl.³ B60D 1/00
U.S. Cl. 280—477 6 Claims



1. A trailer swivel hitch guide adapted for attachment on the bumper of a vehicle and received around a trailer hitch ball secured to the bumper, the ball used for releasable attachment to a trailer or the like, the guide comprising:

a base plate having a front, rear and sides, the base plate having an aperture therethrough, the aperture having a circumference greater than the circumference of the ball and adapted for receipt around the ball, the plate resting on top of the bumper;

an insert sleeve received between the base plate aperture and the ball, the ball secured to the sleeve;

an upright sidewall attached to the sides of the base plate and angled inwardly toward the ball and around the rear of the plate, the sidewall having a height greater than the height of the hitch ball; and

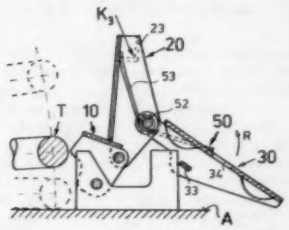
guide release means attached to the sidewall for securing the base plate to the bumper when the trailer is being attached to the ball, the guide release means releasing the base plate to swivel around the outer circumference of the sleeve when the vehicle is pulling the trailer.

4,417,749

SKI BINDING WITH STEP-IN FRAME

Hans Näpflin, Kastanienallee 5, CH 6375 Beckenried, Switzerland

Filed Aug. 28, 1981, Ser. No. 297,107
Claims priority, application Austria, Sep. 3, 1980, 4435/80
Int. Cl.³ A63C 9/085
U.S. Cl. 280—614 4 Claims



1. A ski binding comprising a step-in frame which is pivotally connected to the surface of the ski or to a sole plate at its forward end by means of pivotal connection, said step-in frame being adapted to be locked in position with respect to the top surface of the ski or the sole plate at its rearward end by means of a locking device, said locking device comprising a bearing block and a hold-down lever controlled by a locking lever, characterized in that said bearing block (40) has an open U-shaped cross section and profile forming a forward and rearward upstanding leg, said hold-down lever (10) is pivotally mounted in its lower portion about a first pivot axis (11) provided on said forward leg of said bearing block (40) adjacent said step-in frame portion of said binding, said locking lever (20) being pivotally attached at its forward end to said hold-down lever (10) by means of a second pivot axis (13), said locking lever (20) having pivotally attached to is its middle section a third lever (30) by means of a third pivot axis (21) at the forward end of said third lever on which said third pivot axis is mounted a roller (22) and a spring clip (50), said spring clip urging said third lever (30) and said locking lever (20) radially apart about said third pivot axis towards a releasing position, and in a locking position, said roller (22) is pressed into engagement with the inner side of said rearward leg of said U-shaped bearing block.

4,417,750

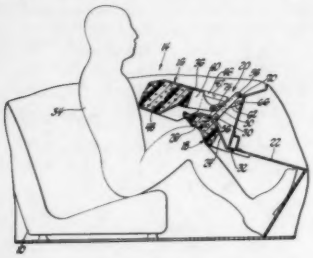
OCCUPANT RESTRAINT SYSTEM

Donald L. Burry, Royal Oak, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Aug. 17, 1981, Ser. No. 294,211
Int. Cl.³ B60R 21/08
U.S. Cl. 280—753 2 Claims

1. An occupant restraint system adapted to be combined

with the instrument panel of an automotive vehicle and located in front of a seated passenger, said occupant restraint system comprising a torso-pad supported within a guide track formed in said instrument panel for movement between a first position wherein said torso-pad is in line with the upper portion of said instrument panel and a second position wherein said torso-pad is extended outwardly from said instrument panel towards said seated passenger and maintained in a fixed position for receiving the impact of the torso of said seated passenger; a knee-pad forming a lower portion of said instrument panel, hinge means supporting a lower portion of said knee-pad for pivotal movement in a direction away from said seated passenger so when the knees of said seated passenger impact against said knee-pad at a point higher than said hinge



means during sudden deceleration of said automotive vehicle said knee-pad moves towards said instrument panel; actuator means operatively interconnecting said torso-pad to said knee-pad whereby movement of said knee-pad in said direction away from said seated passenger causes said torso-pad to move from said first position to said second position; and cooperating locking means carried by said torso-pad and said track for maintaining said torso-pad in said second position when said torso of said seated passenger impacts against said torso-pad so as to prevent the impact of said torso against said torso-pad from acting through said actuator means to move said knee-pad.

4,417,751

PASSIVE SAFETY BELT SYSTEM

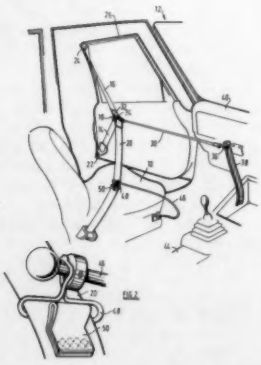
Simon D. Packington, Bognor Regis, England, assignor to Britax (Wingard) Limited, Chichester, England

Filed Sep. 1, 1981, Ser. No. 298,357

Claims priority, application United Kingdom, Oct. 29, 1980, 8034787

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—802 **3 Claims**



1. A motor vehicle having a front-hinged door and an adjacent seat provided with a safety belt system comprising a shoulder strap, a lap strap and a common strap interconnected to form a three-point safety belt, the free ends of the shoulder and lap straps being connected to the rear edge of said door in proximity to the top and bottom corners thereof and the free end of the common strap being guided, at a location inboard of and adjacent to the bottom of the back of the seat, on to an inertia reel, the system further comprising puller means interconnecting a point on the safety belt which is inboard of the seat when the door is closed and a point on the vehicle in front of and above the knees of an occupant of the seat when the door is open, an arm of which one end has an aperture through which the commonstrap runs and the other end is mounted for angular movement about a horizontal axis adjacent to the front inboard corner of the seat, the inboard end of said axis being in front of the outboard end thereof so that said aperture is movable between a first position adjacent to the location of which said common strap is guided on to the inertia reel and a second position above and outboard of said first position, and stop means on said common strap adapted to engage with said aperture to lift said arm from its first position to its second position when a pre-determined length of said common strap has been pulled off the inertia reel.

4,417,752

PRESSURE-SENSITIVE COPYING MATERIAL

Marion Qualitz, Hoffeldstr. 70, D-4010 Hilden, and Viktor A. Krupp, Chopinstr. 12, D-4000 Düsseldorf, both of Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,746

Claims priority, application Fed. Rep. of Germany, Feb. 28, 1981, 3107707

Int. Cl.³ B41M *5/22*

U.S. Cl. 282—27.5 **8 Claims**

1. A pressure-sensitive copying material having improved shelf life and fastness to light and consisting of a support sheet or web coated with a dye precursor together with a binder therefor and of a support sheet or web containing a dye acceptor material which is capable of forming a dye by reaction with the dye precursor, characterised in that the support sheet or web containing the dye precursor is coated on one of its surfaces with an intimate mixture of from 7 to 35% by weight of hexacosanoic acid-1-triacontanol ester or hexacosanic acid-1-hentriacontanol ester, from 0 to 18% by weight of a mixture of esters of higher aliphatic carboxylic acids and higher aliphatic alcohols, the mixture having a predominant content of nonacosanic acid esters of aliphatic alcohols containing from 12 to 30 carbon atoms in the alcohol radical, from 0 to 30% by weight of a mixture of esters of one or more lower alkylene glycols containing from 2 to 4 carbon atoms and higher aliphatic, straight-chain or branched carboxylic acids, the mixture consisting predominantly of ethylene glycol and 1,4-butylene glycol esters of straight-chain dotriacontanic acid in addition to up to 10% by weight of corresponding esters of one or more straight-chain or branched-chain carboxylic acids containing a total of from 28 to 34 carbon atoms, from 0 to 25% by weight of a polyethylene wax having a dropping point of from 103° to 107° C. and a setting point of from 90° to 94° C., from 0 to 10% by weight of a low-pressure polyethylene having a dropping point of from 118° to 128° C. and a setting point of from 104° to 108° C., from 10 to 80% by weight of a plasticizer selected from the group consisting of phenol pentadecane sulfonate, cresol pentadecane sulfonate, and mixtures thereof, from 0 to 21% by weight of a plasticiser selected from the group consisting of phthalic acid polyesters of higher alkane diols, the plasticiser having a cold setting point of −35° C. or lower and a density d20/4 of from 1.035 to 1.045 g/cc, from 0 to 8% by weight of a plasticiser selected from the group consisting of phthalic acid polyesters of higher alkane diols, the plasticiser having a cold setting point of −20° C. or lower and a density d20/4 of from 1.090 to 1.100 g/cc, from 0 to 20% by weight of a finely particulate filler and from 3 to 15% by weight of one or more dye precursors.

4,417,753
METHOD AND APPARATUS FOR JOINING MATERIALS

David Bacehowski, Wildwood; Paul Measells, Libertyville, and Kenneth Zabielski, McHenry, all of Ill., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed May 21, 1981, Ser. No. 265,933
Int. Cl.³ F16L *13/02*
U.S. Cl. 285—21 15 Claims

1. A method for joining materials comprising:

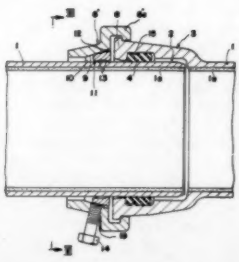
fusing a first thermoplastic material to a first layer of a connector, said connector having telescopically related first and second layers, said layers being made of essentially different thermoplastic components, the primary component of said second layer being selected to melt or deform at a lower temperature than said first layer, and;

fusing said connector to a second thermoplastic material, by heating said connector to a temperature sufficient to melt or deform said second layer without melting or deforming said first layer, whereby, said second layer bonds to said second thermoplastic material.

4,417,754
PIPE JOINT FOR PREVENTING SEPARATION

Tadao Yamaji, Ashiya; Toshi Nakajima, Kobe, and Takeshi Kashi, Amagasaki, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed Apr. 16, 1982, Ser. No. 369,115
Claims priority, application Japan, Sep. 30, 1981, 56-146274
Int. Cl.³ F16L *21/02*
U.S. Cl. 285—104 8 Claims



1. A pipe joint for preventing separation wherein an annular packing is provided between a packing seat formed on the inner periphery of a socket and the outer periphery of a spigot, the pipe joint comprising:

a plurality of circular arc housings connected together in the form of an annular ring and surrounding the spigot outer periphery outside the socket, each housing comprising a first portion having a radially inwardly extending lip at one axial end thereof and a radial web at the other axial end thereof remote from the socket end face, and a second portion extending axially from the inner end of said radial web away from the socket end face, said second portion being provided on its inner periphery with a tapered surface increasing in diameter toward the socket end;

an annular outer flange formed on the end of the socket and engageable by said radially inwardly extending lips of the housing first portions;

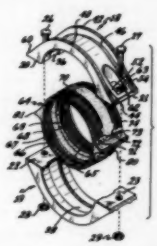
a stopper in the form of a ring divided at one location and interposed between the inner peripheral tapered surfaces of the housing second portions and the spigot outer periphery immediately inwardly of the radial webs of the housing first portions, said stopper being provided with engaging edge means in a plurality of circumferential rows on its inner periphery and with an outer peripheral tapered surface increasing in diameter toward the socket end and adapted to be in wedging engagement with the inner peripheral tapered surfaces of the housing second portions; and

tap bolts extending through the housing second portions for pressing the stopper from outside against the spigot outer periphery, and radial recesses formed on the surfaces of said radial webs of the housing first portions, said radial recesses being opposed to said tap bolts.

4,417,755
PIPE COUPLING

Morris Gittleman, Los Angeles, Calif., assignor to Familian Corp., Van Nuys, Calif.

Continuation of Ser. No. 512,958, Oct. 7, 1974. This application Oct. 5, 1981, Ser. No. 308,360
Int. Cl.³ F16L *17/04*
U.S. Cl. 285—373 11 Claims



1. In a pipe coupling for coupling the ends of pipes or conduits in fluid tight relationship adapted for pipes either with or without external annular end ribs comprising in combination, generally circular clamping means configured for clamping around the pipe ends, said clamping means embodying a pair of substantially semi-circular clamping members constructed to be clamped together and bolt means to draw the ends of the said clamping members towards each other, circular gasket means adapted to be interposed between the clamping means and the pipe ends being coupled and spanning the ends of the pipe, the said clamping members being constructed to clamp the gasket means against the pipe ends, the gasket means having diametrically opposed, outwardly-extending radial ears, the clamping members having end parts with the said ears clamped there between, the clamping members being held in spaced relationship by the ears, the improvement comprising said clamping means being constructed of plastic material, each of said clamping members having external annular radially extending side ribs and each having external annular grooves formed in it adjacent to and co-extensive with the annular ribs, the said annular ribs extending to the ends of the said end parts of each clamping member, additional external, radially extending ribs formed on each of said end parts on the

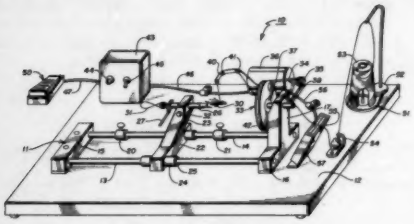
inside of the said grooves to provide the necessary strength to said clamping members while each clamping member having sufficient deformability to deform against the gasket when the a clamping members are clamped together, the said plastic material having sufficient deformability whereby in response to clamping force drawing said clamping members toward each other, the said clamping members deform in contour whereby to exert a substantially radially inward clamping force against the gasket through substantially 360° **thereby having the capability of accommodating greater variations in dimensional tolerance of pipe diameters and of coupling rigid pipe ends with said bolt means torqued within the stress limitations of said material.**

4,417,756

THREAD LOOPING MACHINE

Donald P. Herke, 3474 N. Chatsworth, St. Paul, Minn. 55112

Filed Jul. 28, 1981, Ser. No. 287,866
Int. Cl.³ D03J *3/00*
U.S. Cl. 289—2 **11 Claims**



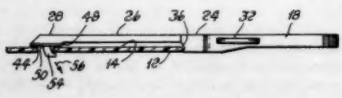
1. A thread looping machine comprising:
(a) a frame mechanism having a longitudinal guideway;
(b) a carriage slidably secured to said longitudinal guideway having a dependent member spaciously disposed from one end of said longitudinal guideway;
(c) a vise secured to said dependent member near its end having a work gripping portion extending generally towards said one end of said longitudinal guideway;
(d) a circular bail mechanism including a tubular member extending through said circular bail mechanism substantially parallel to said longitudinal guideway and secured to said frame mechanism, said circular bail mechanism being rotably disposed on said tubular member in spaced and confronting relationship to said vise;
(e) a thread station constructed and arranged outside said carriage to receive a spool of thread and including thread tension means applying tension to thread passing therethrough;
(f) and a drive mechanism operably connected to said frame mechanism and to said circular bail mechanism to rotate the bail and any thread around any work in said work gripping portion of said vise.

4,417,757

RECORDING DISC HANDLING DEVICE

Thomas R. Morrison, 137 Overlook St., Mount Vernon, N.Y. 10552

Filed Nov. 9, 1981, Ser. No. 319,475
Int. Cl.³ B65G *7/12*
U.S. Cl. 294—26 **7 Claims**



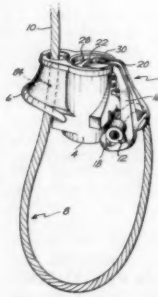
1. A recording disc handling device for handling a recording disc having a circular edge and a spindle hole at a center thereof, comprising:
first and second spaced-apart grooved members operative to engage said circular edge of said recording disc in grooves thereof at first and second spaced-apart locations;
a support arm operatively connected to said first and second grooved members;
said first and second grooved members being operative, when contacting said circular edge, to position said support arm adjacent said spindle hole;
a retractable spindle in said support arm fully retractable in said support arm;
means for extending said retractable spindle from said support arm into said spindle hole; and
means for grippingly engaging said retractable spindle in said spindle hole whereby said recording disc is stably gripped at three points for handling thereof.

4,417,758

REMOTELY RELEASABLE CHOKER

Dennis H. Vaders, Puyallup, Wash., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Dec. 3, 1981, Ser. No. 327,003
Int. Cl.³ B66C *1/38*
U.S. Cl. 294—78 R **7 Claims**



1. A choker assembly, comprising:
a substantially closed body,
eye means on the body for allowing a cable to slide therethrough,
a pivotally mounted latch arm on the outside of the body having an open position and a locked position where the locked position will capture and hold the end of a cable,
means on and extending within the body for locking the latch arm in its locked position, and
means within the body for releasing the locking means including a receiving means for receiving a remotely generated wave form release signal and actuating means for removing the locking means engaged with the latch arm in response to the release signal.

4,417,759

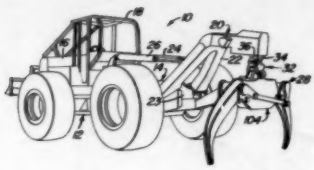
GRAPPLE PIVOT JOINT WITH SWING DAMPENER

Victor C. Pierrot, III, and Gerald J. Ihm, both of Dubuque, Iowa, assignors to Deere & Company, Moline, Ill.

Filed Sep. 8, 1981, Ser. No. 300,095
Int. Cl.³ B66C *1/00*; **F16F** *7/04*
U.S. Cl. 294—86 R **5 Claims**

1. In a pivot joint incorporating a friction brake having a first and second member respectively defining first and second axially aligned bores, a pivot pin non-rotatably received in said first bore and rotatably received in said second bore, means for maintaining said pivot pin, wherein the improvement comprises: a first and second partial rim generally axially extending

radially and oppositely aligned extending from respective said first and second members; said second member includes a pair of lugs provided respectively with a pair of coaxial bores which define the second bore, one of said lugs having said second partial rim extending therefrom, said second rim having a formed channel therein, said first member including a lug disposed between said pair of lugs and having a first bore in coaxial alignment with said second bores and having said first partial rim extending axially therefrom, said first rim having a



formed channel; said pivot pin having a portion extending through said first and second bores and between said rims; a friction brake located between said first and second partial rims and around said pivot pin including at least one brake disk having at least one tab extending radially therefrom and received in said channel of said first rim, at least one pressure plate having at least one tab extending radially therefrom and received in said channel of said second rim, compression means for compressing said brake disk against said pressure plate.

4,417,760

TAIL SPOILER FOR MOTOR VEHICLES, IN PARTICULAR FOR PASSENGER CARS WITH A TAIL TRUNK SPACE

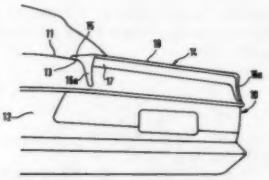
Adolf Koch, Waiblingen-Neustadt, Fed. Rep. of Germany, assignor to Autohaus Lorinser GmbH & Co., Waiblingen, Fed. Rep. of Germany

Filed Aug. 19, 1981, Ser. No. 294,170

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1981, MR848; May 21, 1981, 8115138

Int. Cl.³ B62D *35/00*

U.S. Cl. 296—1 S **7 Claims**



1. A tail spoiler for motor vehicles, in particular for passenger cars including a tail trunk section provided with an upper outer face, a rear outer face downwardly extending therefrom, and a transition region connected to the upper outer face and to the rear outer face, the tail spoiler comprising a center portion arranged along the transition region and extending along the width of the tail trunk portion; an air deflection part connected to and extending rearwardly and upwardly from the center portion, so as to form an upper air guide face which is directed rearwardly and upwardly in longitudinal direction of the motor vehicle; and an angular mounting part connected to the center portion, the angular mounting part having at least two shank arms spaced from each other along the width of the motor vehicle and being located on the upper outer face in forward direction, and at least two further shank arms spaced from each other along the width of the motor vehicle and located on the rear outer face in a downward direction, at an angle less than 180° relative to said first mentioned shank arms.

4,417,761

SWIVEL BEARING PROTECTIVE HOUSING FOR AUTOMOTIVE SUN VISOR

Kurt Cziptschirsch, Wuppertal; Lothar Viertel, Saarlouis, and Peter Kaiser, Wermelskirchen, all of Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Filed Jan. 21, 1981, Ser. No. 226,684

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1980, 3005824

Int. Cl.³ B60J *3/02*

U.S. Cl. 296—97 H **4 Claims**

1. A sun visor for automotive vehicles, or the like, including a sun visor body, a mounting shaft for connecting the sun visor body to the body of a vehicle and a swivel bearing housing which is attached to the sun visor body and which is adapted to swivelably receive the mounting shaft, whereby the sun visor body may swivel around the mounting shaft at the swivel bearing housing;

a protective housing surrounding the swivel bearing housing for preventing access to the swivel bearing housing from the exterior of the protective housing; the protective housing having edges around the sides thereof, having corners joining the edges and having opposite sides at the opposite sides of the swivel bearing housing which sides are joined together at the edges; all of the edges, the corners between the edges and contoured areas on the exterior of the protective housing, being gradually curved to have an outer contour radius sufficiently large so as not to present any sharp edges; the swivel bearing housing has an exterior contour and the protective housing has an interior contour when it is surrounding the swivel bearing housing that is at least substantially the same as the outer contour of the swivel bearing housing.

4,417,762

MOTOR VEHICLE ROOF

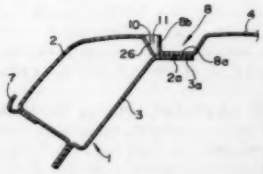
Eiji Imai; Yoshiharu Michiura, both of Yokohama, and Toshio Niihara, Ome, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 25, 1981, Ser. No. 277,334

Claims priority, application Japan, Jul. 4, 1980, 55-94477[U]

Int. Cl.³ B62D *25/06*

U.S. Cl. 296—210 **10 Claims**



1. A motor vehicle having a roof construction comprising:

a main roof panel, each of the lateral sides of said main roof panel being so bent as to form a groove extending longitudinally of the vehicle and having a bottom;

right and left secondary roof panels lying on each lateral side of said main roof panel, each of said secondary roof panels

having an inner portion which is welded to the underside of the bottom of said groove along a weld line extending longitudinally of the vehicle, a ramp portion extending outwardly and upwardly from said inner portion, and a roof portion extending outwardly from said ramp portion as far as an outermost edge of a contour of the roof surface so that the roof surface contour is constituted by said main roof panel and the roof portions of said right and left secondary roof panels, an interspace formed, on each side, between the outer side wall of said groove and said ramp portion of said secondary roof panel, said interspace being filled with a sealant; and

right and left inner panels each of which is welded to each respective secondary roof panel to form a hollow girder which extends longitudinally of the vehicle under the roof portion of said secondary roof panel.

4,417,763

SLIDING-TILTING-ROOF FOR MOTOR VEHICLES

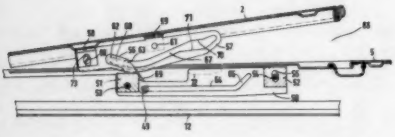
Albert Schlapp, Dreieich, and Rudolf Roos, Maintal, both of Fed. Rep. of Germany, assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed May 28, 1981, Ser. No. 268,033

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020675

Int. Cl.³ B60J 7/04

U.S. Cl. 296—216 **19 Claims**



1. Sliding-rising roof for motor vehicles comprising: a rigid cover plate which in its closed position, closes a roof cut-out while forming an encircling marginal gap; said cover plate having front and rear slide blocks by which it is laterally guided on guide rails mounted in the roof cut-out; said front and rear slide blocks being driven by pressure-resistantly and displaceably guided cables which engage said rear slide blocks; said cover plate being capable of being either raised in the manner of front hinged ventilator flaps, by having its rear edge raised or, once its rear edge has been lowered, moved under the rear rigid roof cover; the front edge of said cover plate being pivotally mounted on an intermediate frame which is in turn pivotally mounted on the front slide blocks; the rear frame part of said intermediate frame engaging beneath a marginal gap with interposition of a first and second sealing element which when in the closed position said first sealing element bears on the underside of the cover plate and said second sealing element bears on the underside of the roof area; and in that the rear slide blocks are in driving connection with the intermediate frame and the cover plate, the intermediate frame is fixed in the closed position during pivoting movement of the cover plate and, starting from the closed position, is interlocked with the cover plate upon lowering of the rear edge of the cover plate and being displaceable together therewith; and a guide pin fixed on each of the two rear slide blocks directed substantially horizontally and tranversely of the direction of cover plate displacement, the guide pin engaging a first guide link mounted laterally on the intermediate frame and having pivotally mounted on its free end a raising lever which has first and second spaced-apart slide pins mounted on it which engage into a second guide link mounted laterally on the cover plate.

4,417,764

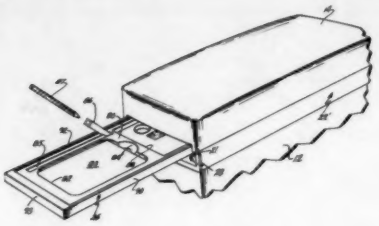
AUTOMOTIVE ARMREST ASSEMBLY

Konrad H. Marcus, and Sheldon J. Watjer, both of Holland, Mich., assignors to Prince Corporation, Holland, Mich.

Filed Nov. 9, 1981, Ser. No. 319,689

Int. Cl.³ A47C 7/62

U.S. Cl. 297—194 **9 Claims**



1. An armrest assembly comprising:

compartment means adapted to be secured to a vehicle armrest base, and

drawer means slidably mounted to said compartment means for movement between a stored position within said compartment means and an operative position extended from said compartment means; the improvement comprising:

said drawer means having a generally horizontally extending floor with aperture means extending therethrough for admitting and holding a drink container; guide and support means extending from the front to the rear of said drawer means; and

slide means slidably mounted on said guide and support means for providing sliding movement of said slide means to and from a position over said floor, whereby when said drawer is in an extended open position said slide means is slidable with respect to said floor and compartment between a stored position within said compartment means and an operative position over said floor extended from said compartment means, and when said slide means is in said stored position within said compartment said floor is capable of supporting a drink container within said aperture means, said drawer and slide means including means for holding a writing media in a position accessible for use when said slide means is in said operative position.

4,417,765

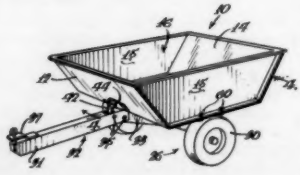
DUMP CART

James L. Wirsbinski, Marshfield, Wis., assignor to J. I. Case Company, Racine, Wis.

Filed Sep. 24, 1981, Ser. No. 305,105

Int. Cl.³ B60P 1/28

U.S. Cl. 298—5 **5 Claims**



1. A dump cart suitable for use with a garden or lawn tractor comprising:

(a) a wheel assembly;

(b) a body member having a front, back, and sides defining a cargo space;

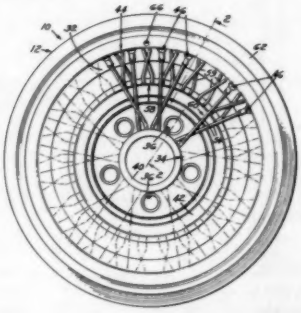
(c) means for removably mounting the body member on the wheel assembly in one of two mounting positions approximately 180 degrees relative to each other;
(d) a drawbar,
(e) means for connecting the drawbar to the wheel assembly to permit pulling and pushing of the cart;
(f) a first latching means mounted on the drawbar; and
(g) two second latching means, each mounted on the front and back of the body member and adapted to coact with the first latch means to releasably maintain the body member in a fixed position with respect to the drawbar;
whereby the body member may be mounted in either mounting position and one of the second latching means will coact with the first latching means to releasably maintain the body member in a first position with respect to the drawbar.

4,417,766

WIRE SPOKE VEHICLE WHEEL AND METHOD OF MANUFACTURE

Richard W. Smith, Lansing, and William J. Waugaman, Grosse Pointe Farms, both of Mich., assignors to Motor Wheel Corporation, Lansing, Mich.

Filed Sep. 10, 1981, Ser. No. 300,890
Int. Cl.³ B60B *1/02*
U.S. Cl. 301—55 **12 Claims**



1. A method of manufacturing a wire spoke wheel for pneumatic tubeless tires comprising the steps of:
(a) forming a wheel rim segment comprising a rim base having an integral first bead retaining flange at one end and a circular base edge at the opposing end,
(b) separately forming a circumferential band which includes an inner portion and a radially outer portion adapted to function as a bead retaining flange,
(c) separately forming a center hub including openings for mounting the wheel to vehicle,
(d) mounting said hub within band by assembling a plurality of wire spoke means between said radially inner portion of said band and said hub with said hub and band fixtured in coaxial relation, and then
(e) permanently securing said rim segment to said band by welding said band to said circular edge entirely around said edge between said inner and outer portions of said band with said rim segment and the band/hub/spoke subassembly resulting from said step (d) fixtured in coaxial relation, such that said radially outer portion of said band is disposed to function as a second bead retaining flange on said rim segment, and said radially inner portion of said band with said wire spoke means assembled thereto is disposed radially inwardly of said rim segment.

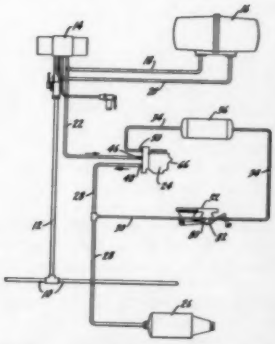
5. A wire spoke vehicle wheel comprising a rim including a first rim section having a bead seat, a first bead retaining flange integral with said bead seat and a rim base portion projecting from said bead seat and terminating in a circular edge, a second rim section welded to said first rim section entirely around said edge with an outer portion of said second rim section projecting radially outwardly from said edge to form a second bead retaining flange on said rim and an inner portion of said second rim section projecting radially inwardly from said edge and being spaced radially inwardly of said first rim section; a hub structurally separate from said rim and including means for mounting the wheel to a vehicle; and a plurality of wire spoke elements adjustably secured at one end to said inner portion of said second rim section by a plurality of nipples and secured at an opposing end to said hub, with said hub being mounted by said wire spoke means and said nipples coaxially within said rim.

4,417,767

EMPTY AND LOAD BRAKE SYSTEM WITH SEPARATE PROPORTIONAL VALVE AND LOAD SENSOR VALVE MEANS

Henry R. Billeter, Marco Island, Fla., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Jan. 24, 1982, Ser. No. 391,490
Int. Cl.³ B60T *8/18, 8/20*
U.S. Cl. 303—23 R **6 Claims**



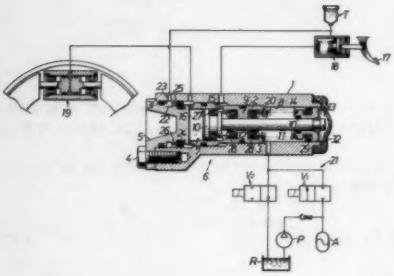
1. In an empty and load device of a railroad vehicle air brake system of the type having an air pressure source, a control valve connected to said source, a proportional valve connected to said control valve, a brake cylinder connected to said source through said control valve and proportional valve, and a load sensor valve connected to the line between the proportional valve and brake cylinder with a feedback line from the load sensor valve to the proportional valve for controlling the application of air through said proportional valve to said air cylinder, said load sensor valve having:
a valve body having a chamber therein and an air inlet and an outlet;
valve means for controlling air flow between the inlet and outlet;
a piston movable within the valve chamber to control the position of the valve means;
a load sensing arm pivotally attached to the valve body and connected to the piston; and
a rock and roll spring disposed between the piston and the valve means for dampening movement of the piston relative to the valve means so as to prevent rough track conditions from simulating a loaded or unloaded vehicle.

4,417,768

BRAKING OIL PRESSURE CONTROL DEVICE FOR AN ANTI-SKID BRAKE SYSTEM

Makoto Satoh, Kamifukuoka; Yoshitaka Miyakawa, Kawagoe; Etsuo Fujii, Wako, and Shohei Matsuda, Ooi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 10, 1981, Ser. No. 282,000
Claims priority, application Japan, Jul. 25, 1980, 55-102123
Int. Cl.³ B60T 8/00
U.S. Cl. 303—113 13 Claims



1. In an anti-skid brake system including: a cylinder body; first and second cylinder chambers serially disposed in said cylinder body on opposite sides of a partition wall; a brake piston slidable in said first cylinder chamber and defining on one side thereof a first braking oil pressure chamber communicating with a master cylinder to receive operating oil therefrom and on the other side a second braking oil pressure chamber containing operating oil and communicating with a wheel cylinder of a wheel brake; a reservoir for operating oil connected to said master cylinder; and a control piston slidable in said second cylinder chamber and cooperating with said partition wall to define therebetween a control oil pressure chamber which is in communication with a control oil pressure circuit, said control piston being connected to said brake piston such that when control oil is supplied from said control oil pressure circuit to said control oil pressure chamber, said control piston is moved together with said brake piston in a direction to reduce excessive brake pressure in said second braking oil pressure chamber;

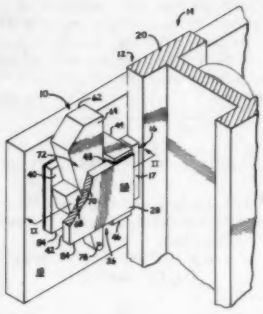
a braking oil pressure control device for the anti-skid brake system comprising: a supplementary oil chamber in said cylinder body communicating with said second braking oil pressure chamber and said oil reservoir; a first seal cup interposed between said supplementary oil chamber and said second braking oil pressure chamber for preventing outflow of the operating oil from said second braking oil pressure chamber to said supplementary oil chamber but permitting inflow of operating oil from said supplementary oil chamber into said second braking oil pressure chamber; and a second seal cup interposed between said first braking oil pressure chamber and said second braking oil pressure chamber for preventing outflow of operating oil from said first braking oil pressure chamber to said second braking oil pressure chamber but permitting inflow of operating oil from said second braking oil pressure chamber to said first braking oil pressure chamber.

4,417,769

SELF ADJUSTING BEARING ARRANGEMENT

Charles R. Chelin, Mentor, Ohio, assignor to Towmotor Corporation, Mentor, Ohio

PCT No. PCT/US82/00380, § 371 Date Mar. 29, 1982, § 102(e) Date Mar. 29, 1982
PCT Filed Mar. 29, 1982, Ser. No. 375,115
Int. Cl.³ F16C 29/04
U.S. Cl. 308—3 R 13 Claims



1. A self adjusting bearing arrangement (10) for a pair of relatively movable members (12) comprising:

bearing means (16) for guiding a first member (18) of said pair (12) for movement relative to a second member (20) of said pair (12), said second member (20) being an elongate upright having a longitudinal upright axis (25);

carrier means (26) for connecting said bearing means (16) to the first member (18) of said pair (12) and guiding said bearing means (16) for movement between a first position at which said bearing means (16) is spaced from contact with the second member (20) and a second position at which said bearing means (16) is contactable with said second member (20),

said carrier means (26) includes a support assembly (28) having a bearing support passage (48) disposed therethrough and being connected to said first member (18), said passage (48) having a longitudinal passage axis (49) and being oriented substantially normal to the longitudinal upright axis (25);

said bearing means (16) includes a bearing (17) having a guide portion (34), a bearing portion (36) and a load surface portion (38), said guide portion (34) being slidably disposed in said passage (48) and movable relative to said passage (48) along said longitudinal passage axis (49) between said first position at which said bearing portion (36) is spaced from said second member (20) and said second position at which said bearing portion (36) is in contact with said second member (20); and

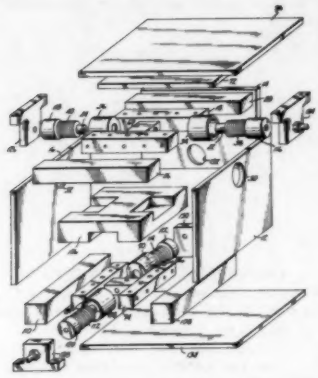
adjustment means (30) for automatically applying a predetermined force to said bearing means (16) for moving said bearing means (16) to said second position and preventing movement of said bearing means (16) from said second position toward said first position, said adjustment means (30) includes a thrust member (32) having a predetermined weight, said thrust member (32) being mounted on said carrier means (26) adjacent said bearing (17) and contactable with said load surface portion (38), said thrust member being movable in response to and under the influence of its own weight and relative to the support assembly (28) and the bearing (17), said predetermined force being a function of said weight, said thrust member (32) includes a triangular shaped wedge (54) having first, second and third sides (56,58,60), and first and second opposed surfaces (62,64), said first side (56) being contactable with said bearing (17) load surface portion (38).

4,417,770

HIGH VACUUM COMPATIBLE AIR BEARING STAGE

Theodore W. Tucker, Lincoln, Mass., assignor to Control Data Corporation, Minneapolis, Minn.

Filed Sep. 21, 1981, Ser. No. 304,228
Int. Cl.³ F16C 32/06, 29/02
U.S. Cl. 308—3.5 6 Claims



1. A high vacuum compatible air bearing comprising:
an air-tight housing having four apertures;
two moveable carriages mounted interior said housing, a first carriage having means for constraining its movement to a first direction, and the second carriage having means for constraining its movement to a second direction, the first direction being orthogonal to the second direction;
a central plate mounted interior said housing intermediate said two carriages;
two air inlet ports, one each mounted on a carriage and extending through one of said apertures;
two air outlet ports, one each mounted on a carriage and extending through an aperture;
a plurality of orifices mounted about the portion of the exterior of each carriage facing closely adjacent surfaces;
two first communicating passageways, one each mounted interior to each carriage and extending between the air inlet port and each of said orifices;
two second air communicating passageways, one each extending between the exterior of a carriage, through said carriage and to a outlet port;
an airtight bellows, flexible in the direction of freedom of movement, mounted between each aperture and the port extending therethrough and forming an airtight seal therebetween; and
a source of pressurized air communicated to said air inlet ports; the interfaces between the exterior of said carriages and closely adjacent surfaces forming a compensated air bearing therebetween.

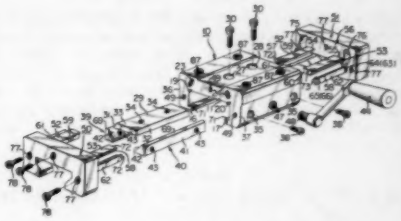
4,417,771

LINEAR BALL BEARING UNIT

Hiroshi Teramachi, 34-8, Higashi-Tamagawa 2-chome, Setagaya-ku, Tokyo, Japan 158

Filed Jun. 22, 1982, Ser. No. 390,915
Int. Cl.³ F16C 29/06
U.S. Cl. 308—6 C 6 Claims

1. A linear ball bearing unit of the kind which includes a track shaft extending therethrough, essentially comprising:
a bearing body including a cavity having a substantially rectangular cross-sectional configuration, said cavity being formed with a pair of oppositely located flanges at the lower part of the side walls and a pair of symmetrically located load carrying ball grooves having a radius of curvature substantially equal to one half of the diameter of the rolling balls at the upper end of the side walls thereof, said bearing body further including two lines of non load carrying ball holes extending therethrough in parallel to one another, said non load carrying ball holes being located at a predetermined distance upward of said load carrying ball grooves in vertical alignment with the latter,
retainer-cover assemblies fixedly secured to both the end faces of the bearing body, said retainer-cover assemblies comprising in integral combination a retainer and a cover and being formed with an U-shaped groove for reversing the direction of movement of the balls at the upper part of the inside wall of the cover respectively, the upper part of said U-shaped groove being in continuation with the non load carrying ball hole while the lower part of the same being in continuation with the load carrying ball groove,
the retainer of said retainer-cover assemblies comprising a pair of symmetrically located horizontal members and a pair of symmetrically located holding members both of which are integrally secured to the cover so that a load carrying ball guide space is formed therebetween in such



a manner as to prevent the balls from falling down therefrom, said load carrying ball guide space having a radius of curvature substantially equal to the diameter of the balls,
both the horizontal members and the holding members of the retainer being provided with connecting means at the free end part thereof respectively at which they come in abutment against the oppositely located one,
a horizontal slide member fixedly secured to the top wall of the cavity, said horizontal slide member having a substantially trapezoidal cross-sectional configuration of which inclined end faces correspond to those of the horizontal members of the retainer, and
a pair of symmetrically located side slide members fixed to the side walls of the cavity, said side slide members having a substantially triangular cross-sectional configuration and being located between the holding member and the flange while the upper inclined end face of said side slide members corresponding to the lower inclined face of the holding member.

4,417,772

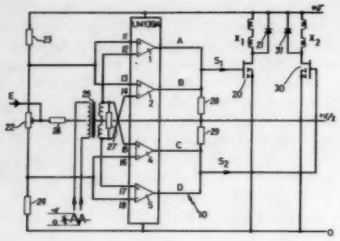
METHOD AND APPARATUS FOR CONTROLLING THE ENERGIZATION OF THE ELECTRICAL COILS WHICH CONTROL A MAGNETIC BEARING

Alan A. Robinson, Wassenaar, Netherlands, assignor to Agence Spatiale Europeenne, Paris, France

Filed Apr. 10, 1981, Ser. No. 252,849
Int. Cl.³ F16C 39/06
U.S. Cl. 308—10 5 Claims

1. A method of controlling the energization of electrical coils which control a magnetic bearing of the type having stator and rotor members disposed coaxially with each other in the same plane with an annular gap between them, said electrical coils being located in pairs on each axis in said plane, one coil in each pair being located on the magnetic bearing at one end of said axis and the other coil at the other end of said axis, and wherein the relative positions between the stator and rotor

members along the axis are detected and a position error signal representing the position deviation relative to a reference position is detected, the method comprising the improvement of generating a first control signal in response to the position error signal being positive and a second mutually exclusive control signal in response to the position error signal being negative; and applying said first control signal to a first electronic switching circuit coupled to the electrical coil located at one end of said axis and applying said second control signal to a second electronic switching circuit coupled to the electrical coil located at the other end of said axis, whereby only that coil is energized which is located near the point where the gap is smaller, thereby to reduce the magnetic flux there and restore the centered position.



4,417,773

BALL SWIVEL JOINT FOR AN EXCAVATOR OR THE LIKE

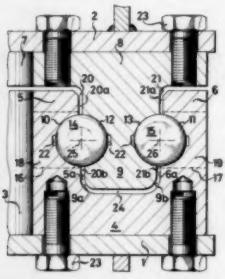
Anton Becker, Neuss, Fed. Rep. of Germany, assignor to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft, Grevenbroich, Fed. Rep. of Germany

Filed Nov. 13, 1978, Ser. No. 959,878

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1977, 2752487

Int. Cl.³ F16C *19/18, 33/58*

U.S. Cl. 308—178 **1 Claim**



1. A ball swivel joint for rotatably mounting a structure on a support of an excavator, rotatable crane or the like, comprising a first ring member having a U-shaped cross section and including two first annular leg portions which bound an annular recess therebetween, each of said first leg portions having a first semi-spherical groove which is open into said recess; a second ring member having a T-shaped cross section and including a second annular leg portion which is received in said recess bounded by said first leg portions, said second leg portion having two second semi-spherical grooves each of which is open toward a respective one of said first semi-spherical grooves and bounds with the same a spherical groove, said leg portions of said first ring member and said second ring member are so dimensioned that two gaps are formed between said first leg portions and said second leg portion, each of said gaps being formed between said second leg portion and a respective one of said first leg portions and having an upper section located above said ball members and a lower section located below the same, said leg portions of said first ring member and said second ring member being so formed that the upper section of each of said gaps is offset relative to the lower section of the same gap; and two rows of ball members each received in a respective one of the thus-formed spherical grooves.

4,417,774

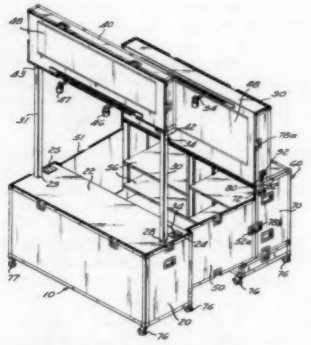
COLLAPSIBLE DISPLAY BOOTH

Mark H. Bevan, Manhattan Beach, and Garry C. Kief, Los Angeles, both of Calif., assignors to Hastings, Clayton, Tucker & Craig, Inc., Newport Beach, Calif.

Filed Jun. 25, 1981, Ser. No. 277,252

Int. Cl.³ A47B *43/00, 53/00, 87/00*

U.S. Cl. 312—108 **8 Claims**



6. A collapsible portable display booth for selling merchandise, comprising:

a front portion, behind which is located a sales area from which merchandise is vended, said front portion being collapsible into a single unit so that it can be easily moved from location to location;

a back portion, said back portion being sufficiently sturdy to prevent customers from approaching said sales area from said back portion, said back portion being collapsible into a single unit so that it can be easily moved from location to location;

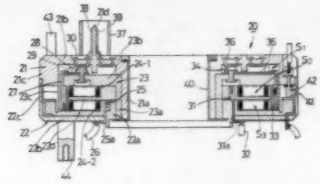
means for securing the area between said front portion and said back portion, said securing means being sufficiently sturdy to prevent customers from reaching said sales area behind said front portion, said securing means also preventing pilferage from said sales area, said securing means being collapsible into at least one of said front portion and said back portion for moving said booth from one location to another; and

at least one elevated display, said elevated display located above said booth and displaying said merchandise offered for sale, said elevated display being collapsible into at least one of said front portion and said back portion for moving said booth from one location to another.

4,417,775
ELECTRICAL CONNECTOR DEVICE

Yoshimi Sakurai, Tanashi; Yoshimi Furukawa, Tokyo; Masaaki Kanai, Tokyo, and Yasufumi Osada, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha and Furukawa Electric Co., Ltd., both of Tokyo, Japan

Filed Nov. 23, 1981, Ser. No. 323,716
Claims priority, application Japan, Nov. 26, 1980, 55-166350; Apr. 13, 1981, 56-55358
Int. Cl.³ H01R 39/02
U.S. Cl. 339—5 M 17 Claims

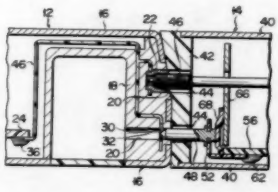


1. An electrical connector device comprising a first insulator, at least one first conductor fixed to said first insulator, a second insulator angularly movable with respect to said first insulator, at least one second conductor fixed to said second insulator, a third conductor in the form of a flexible wire which is disposed between said first and second insulators and which is at least partially loose, first and second contact means electrically connecting either end of said third conductor with said first and second conductors, respectively, a third insulator angularly movable with respect to said first and second insulators, said second contact means being fixed to said third insulator, and a guide mechanism for rendering said second and third insulators to move angularly in the same direction.

4,417,776
CONNECTION TERMINAL DEVICE FOR ELECTRICAL IMPLEMENTS

Kazuyasu Motoyama, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,494
Claims priority, application Japan, Aug. 12, 1980, 55-114157[U]; Aug. 12, 1980, 55-114158[U]
Int. Cl.³ H01R 9/07
U.S. Cl. 339—17 F 18 Claims



1. In an electrical implement comprising a housing; a circuit substrate provided in said housing and having a plurality of terminals; and a connection terminal device,

the improvement wherein said connection terminal device comprises:

a flexible substrate mounted in said housing, said flexible substrate having two ends, one end thereof contacting said circuit substrate; and

a plurality of printed conductive lines mounted on the surface of said flexible substrate, each of said printed conductive lines being provided with a first terminal exposed to the open air and a second terminal electrically connected to a terminal of said circuit substrate;

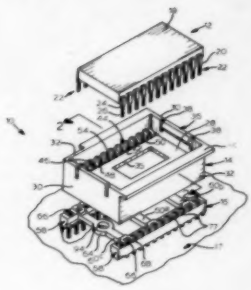
a plug coupled to said first terminal of each of said printed conductive lines, said plugs having inner ends and outer ends projecting into the open air and said plugs being axially movable through said housing; and

urging means coupled to said plugs for urging said plugs in a direction in which said projecting outer end of the plug is moved away from the housing.

4,417,777
INTEGRATED CIRCUIT CARRIER ASSEMBLY

William C. Bamford, Hinsdale, Ill., assignor to Molex Incorporated, Lisle, Ill.

Filed Oct. 13, 1981, Ser. No. 310,645
Int. Cl.³ H01R 13/62
U.S. Cl. 339—17 CF 5 Claims



1. An integrated circuit carrier assembly for an integrated circuit device with a plurality of leads extending from opposite sides thereof including, in combination,

a carrier for mounting said integrated circuit device, said carrier including a support surface upon which said integrated circuit device is supported,

a socket for receiving the leads of said device, comprising a pair of parallel spaced apart housing portions and a plurality of terminals mounted in each of said housing portions, each terminal being adapted to electrically engage a lead when said device is received in said carrier, said housing portions being joined by at least two cross-members,

a plurality of guide means included in said carrier, one for each of the leads of said integrated circuit device, for guiding said leads into said socket through said carrier, each of said guide means including a passage extending through said carrier, each of said guide means further including a funnelling means for directing said lead into said passage, and

means for securing said device in said carrier upon insertion of said device into said carrier,

the improvement comprising:

tabs formed integrally with and extending from the support surface of said carrier defining channels for separately enclosing each of the housing portions of said socket when said carrier is in assembled relationship with said socket.

4,417,778
CIRCUIT INTERLOCK ARRANGEMENT

Henry J. Halvorsen, Cranford; Albert V. Marchetto, Mountainside, and Edwin P. Thomas, Brick, all of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1981, Ser. No. 314,244
Int. Cl.³ H01R 23/70
U.S. Cl. 339—17 M 6 Claims

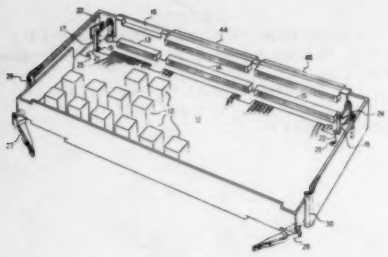
1. An interlocking arrangement comprising:

a first planar pluggable element and a first plug-in connector, the arrangement preventing removal of the first planar pluggable element from the first plug-in connector;

locking means for preventing the removal of the first planar pluggable element after insertion into the plug-in connector;

auxiliary connector means in circuit with the plug-in connector adapted to receive a planar pluggable element; and

unlocking means comprising a second planar pluggable



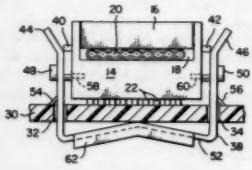
element adapted to mate with the auxiliary connector means and interacting with the locking means to free the first planar pluggable element to allow its removal from the first plug-in connector while maintaining a predetermined circuit status for the first plug-in connector irrespective of the removal of the first planar pluggable element.

4,417,779

PCB-MOUNTABLE CONNECTOR FOR TERMINATING FLAT CABLE

Albert H. Wilson, Los Angeles, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Mar. 26, 1981, Ser. No. 247,897
Int. Cl.³ H01R *13/20*
U.S. Cl. 339—75 MP **11 Claims**



1. An electrical connection assembly comprising:

an upstanding housing;

a plurality of contact elements supported by said housing and defining connector input and output terminals;

a substrate having an upper surface supporting conductive members in facing relation to said connector output terminals and a lower surface, said substrate defining openings extending from said upper surface to said lower surface outwardly of said housing;

a clip member having arms extending through said substrate and a bowed expanse supported by said arms and engaging said substrate lower surface;

actuator means in engagement with said clip member and said housing and operable to apply a downward force by said housing upon said substrate upper surface and an upward force by said clip member upon said substrate lower surface; and

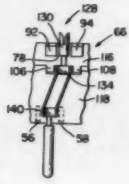
lever means for operating said actuator means.

4,417,780

PITCH TRANSITION CONNECTOR

Robert E. Knapp, Covina, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Continuation of Ser. No. 145,363, Apr. 30, 1980, abandoned.
This application May 24, 1982, Ser. No. 381,130
Int. Cl.³ H01R *13/38*
U.S. Cl. 339—99 R **19 Claims**



1. An electrical connector, comprising:

a housing defining first apertures mutually spaced in a first housing portion by one distance and opposed second apertures mutually spaced in a second housing portion by a second different distance, said first and second housing portions being separable, first and second sets of contact bending constraint posts being located respectively on said first and second housing portions adjacent said first and second apertures and extending therebeyond, said housing defining an open channel separating said first set of constraint posts and said second set of constraint posts; and

a plurality of contact elements, each having opposed end portions respectively disposed in ones of said first and second apertures and a bendable portion extending between said end portions, said first and second sets of constraint posts conforming the bend of said bendable portion to a preselected bend attitude.

4,417,781

DIELECTRIC SEPARATION OF INCOMING AND OUTGOING TERMINATIONS IN A CABLE TERMINATION BLOCK

Harold Johnston, Lachine; Zygmunt Lask, Montreal, and Frederick H. Gill, St. Bruno, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Sep. 21, 1981, Ser. No. 303,830
Int. Cl.³ H01R *9/03*
U.S. Cl. 339—198 J **4 Claims**

1. A cable terminating block comprising;

a rectangular block of dielectric material;

a plurality of rows of terminals extending along the block from one end to the other, and a plurality of terminals in each row, the rows spaced to define spaces for cable conductors;

each terminal including a terminal pin at one end extending from a top surface of said block and a terminal socket at the other end positioned within said block at a bottom surface thereof;

each row of terminals consisting of alternating long terminal pins and short terminal pins;

means at one end of said block for positioning conductors

from a first cable for passage along said spaces and connection to the outer ends of said long terminal pins;

means at the other end of said block for positioning conductors from a second cable for passage along said spaces and connection to said short terminal pins;

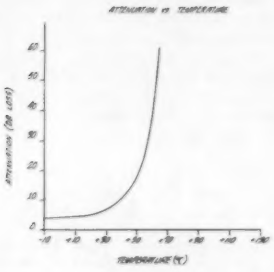
a flat sheet-like dielectric member extending over said block and having rows of holes therein, a hole for each long terminal pin, the holes spaced to fit over said long terminal pins, the dielectric member resting on the short terminal pins, the conductors of said second cable extending below said dielectric member when connected to said short terminal pins and the conductors of said first cable extending above said dielectric member when connected to said long terminal pins.

4,417,782

FIBER OPTIC TEMPERATURE SENSING

Raymond Clarke, Sunnyvale, and Chester L. Sandberg, Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Mar. 31, 1980, Ser. No. 136,057
Int. Cl.³ G02B 5/172
U.S. Cl. 350—96.29 **120 Claims**



44. Apparatus for maintaining a material within a temperature range of from T_1 to T_2, T_1 being less than T_2, and T_2 being less than 200° C., the apparatus comprising:

(a) a waveguide, at least part of the waveguide being in thermal communication with the material so that the temperature of said part of the waveguide is responsive to the temperature of the material, the waveguide comprising a core and cladding disposed on and around the exterior surface of the core, said part of the waveguide exhibiting blackout at a blackout temperature TB, TB being about equal to T_2;

(b) means for directing light at an end of the waveguide;

(c) means for monitoring the intensity of light transmitted by said part of the waveguide; and

(d) means for cooling the material when the means for monitoring detects a substantial change in the intensity of the light transmitted by said part of the waveguide.

4,417,783

PULSATING, OSCILLATING BICYCLE REFLECTOR

Allan D. Le Vantine, 18225 Rancho St., Tarzana, Calif. 91356

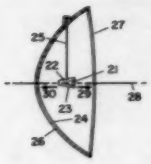
Filed Mar. 16, 1981, Ser. No. 244,263
Int. Cl.³ G02B 5/12
U.S. Cl. 350—99 **10 Claims**

1. A reflecting device mounted on a bicycle that redirects light from a source back toward that source in the form of a pulsating or oscillating signal, comprising:

an optical means, for collecting light from a remote source and focusing it to a focal region, and for projecting light reflected from that focal region back toward the remote source,

a retro-reflector means, for receiving light and returning that light in the same direction from which it was received,

a support and oscillation means, for the retro-reflector means, that causes the retro-reflector means to move in a prescribed path, through the focal region of the optical means, with a regular periodic motion,



a case means, for enclosing and supporting said components means,

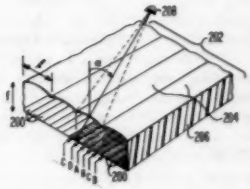
an attachment means, for affixing the case means to the bicycle.

4,417,784

MULTIPLE IMAGE ENCODING USING SURFACE RELIEF STRUCTURES AS AUTHENTICATING DEVICE FOR SHEET-MATERIAL AUTHENTICATED ITEM

Karl H. Knop, Zurich, and Michael T. Gale, Wettswil, both of Switzerland, assignors to RCA Corporation, New York, N.Y.

Filed Feb. 19, 1981, Ser. No. 236,111
Int. Cl.³ G02B 5/18; G09F 3/03
U.S. Cl. 350—162.19 **14 Claims**



1. In an article comprised of an authenticated item of sheet material which is subject to counterfeiting and an authenticating device bonded to said item, wherein said device includes a transparent material bonded to said sheet material, said material having a reflective periodic structure formed as a relief pattern on a viewable surface of said material which is proximate to said sheet material, said transparent material exhibiting a given index-of-refraction and being attached to said sheet material in a manner sufficiently secure to prevent said transparent material from being removed from said sheet material without effectively destroying said structure; the improvement in said device:

wherein the period of said periodic structure is smaller in size than 100 micrometers and each period is comprised of substantially the same given set of a plural number of juxtaposed elements, respective elements of said given set having significantly different reflective characteristics from one another, and

wherein said transparent material has a given thickness no greater than 100 micrometers and has a periodic lenticular array embossed on a surface thereof which is distal to and is oriented substantially parallel to said periodic structure, each period of said array being comprised of a lens having an aperture width that at least approximates that of a period of said structure and having a focal length substantially equal to said given thickness.

4,417,785

LIQUID CRYSTAL DISPLAY WITH NEGATIVE TIMING SIGNAL AND DIELECTRIC INVERSION

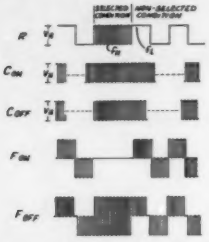
Haruo Nakamura, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 973,761, Dec. 27, 1978, abandoned. This application Jul. 20, 1981, Ser. No. 284,753

Claims priority, application Japan, Dec. 27, 1977, 52-160844; Dec. 29, 1977, 52-159310

Int. Cl.³ G02F *1/133*

U.S. Cl. 350—346 **4 Claims**



1. A liquid crystal display device for operation in the twisted nematic mode, comprising liquid crystal display means including a matrix of display elements and two-frequency matrix-addressing means for supplying a two-frequency output including a high frequency signal f_H and a low frequency signal f_L for the multiplexed driving of said display elements in said display means, said liquid crystal display means containing a liquid crystal display cell including a nematic liquid crystal material having a critical frequency, f_c, intermediate the lower and higher frequency components in said output, the dielectric anisotropy of said liquid crystal material being positive at said lower frequency, f_L and negative at said higher frequency, f_H, said matrix-addressing means connected to said display cell and being arranged and constructed for applying thereto said higher frequency component f_H as a timing signal for placing the element in a selected condition and as a data signal for turning said element ON and OFF, said higher frequency data signal being in phase with said high frequency timing signal for placing selected display elements in an ON condition and said high frequency data signal being 180° out-of-phase with said high frequency timing signal for placing the display elements in a selected condition into an OFF condition and applying said lower frequency signal f_L as a timing signal to the non-selected display elements.

4,417,786

DEVICES BASED ON SURFACE TENSION CHANGES

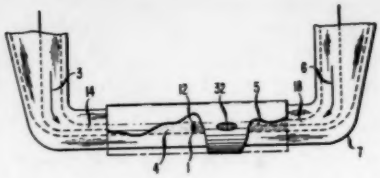
Gerardo Beni, Old Bridge, and Susan Hackwood, Freehold, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Continuation-in-part of Ser. No. 236,113, Feb. 19, 1981, abandoned. This application Jun. 11, 1981, Ser. No. 272,490

Int. Cl.³ G02F *1/29*

U.S. Cl. 350—359 **12 Claims**

1. A device comprising a vessel, a fluid medium, means for applying an electrical potential and a means for observing an optical change induced by a change in said potential characterized in that said device includes an interface capable of storing charge and formed between said fluid medium and a second element which is in intimate contact with said medium, said second element comprises a material which allows said interface to be polarizable wherein said fluid medium is capable of movement, whereby upon a suitable change of said electrical potential applied to said interface through said means for applying an electrical potential, said movement of said fluid is



induced by an induced change in surface tension and said optical change results.

4,417,787

FIVE-COMPONENT MICROSCOPE OBJECTIVE

Lambert J. Danner, Vienna, Austria, assignor to C. Reichert Optische Werke AG, Vienna, Austria

Filed Nov. 16, 1981, Ser. No. 322,057

Int. Cl.³ G02B *9/60, 21/02*

U.S. Cl. 350—414 **1 Claim**

1. A sem-apochromatic microscope objective having an N.A. of substantially 0.85 which comprises a concavo-convex singlet I, a bi-convex singlet II, a plano convex doublet III, a bi-convex doublet IV, and a convex-concavo doublet V aligned sequentially on an optical axis and having the following parameters:

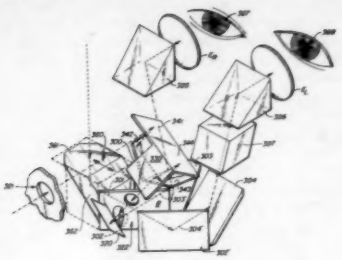
Lens No.	Radius (R)	Thickness (T)	Spacing (S)	Index of Refraction (ND)	Abbe No. (ν)
			$S_0=0.794$		
	$R_1=-2.0075$				
I		$T_1=3.15$		$ND_1=1.78161$	$\nu_1=37.08$
	$R_2=-2.8929$				
			$S_1=0.30$		
	$R_3=25.935$				
II		$T_2=3.20$		$ND_2=1.564$	$\nu_2=60.80$
	$R_4=-10.411$				
			$S_2=0.30$		
	$R_5=\infty$				
		$T_3=1.80$		$ND_3=1.673$	$\nu_3=32.20$
III	$R_6=8.498$				
		$T_4=5.00$		$ND_4=1.434$	$\nu_4=95.58$
	$R_7=-8.184$				
			$S_3=0.50$		
	$R_8=109.720$				
		$T_5=2.80$		$ND_5=1.717$	$\nu_5=29.50$
IV	$R_9=8.498$				
		$T_6=5.00$		$ND_6=1.434$	$\nu_6=95.58$
	$R_{10}=-15.435$				
			$S_4=12.70$		
	$R_{11}=15.435$				
		$T_7=5.10$		$ND_7=1.762$	$\nu_7=26.94$
V	$R_{12}=-15.435$				
		$T_8=6.50$		$ND_8=1.673$	$\nu_8=32.20$
	$R_{13}=7.735$				

4,417,788

STABILIZED ZOOM BINOCULAR

Luis W. Alvarez, Berkeley, and Arnold J. Schwemin, Walnut Creek, both of Calif., assignors to Schwem Instruments, Pleasant Hill, Calif.

Continuation-in-part of Ser. No. 97,114, Nov. 26, 1979, Pat. No. 4,316,649. This application Sep. 18, 1980, Ser. No. 188,200
Int. Cl.³ G02B 23/00
U.S. Cl. 350—500 5 Claims



4. In an optic instrument having two oculars, each addressed to each eye of a viewer, at least one stabilized magnified path and one unstabilized finder path, said paths having a common portion between said oculars and an object to be viewed, the improvement comprising:

a beam splitter aligned for the task of receiving light from the finder path and the magnified path and positioned so as to direct rays of light from said beam splitter to each ocular respectively; and

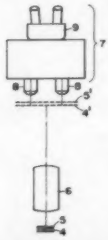
a shutter mechanism for alternately blocking either said finder path or said magnified path.

4,417,789

OBSERVATION DEVICE

Ichiro Kano, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 31, 1980, Ser. No. 221,634
Claims priority, application Japan, Jan. 17, 1980, 55-3923
Int. Cl.³ G02B 22/18
U.S. Cl. 350—513 4 Claims



1. A device for simultaneously observing a plurality of sets of adjacent regions respectively on at least two objects which are superposed on each other with respect to the direction of the optical axis of said device, any one set of said adjacent regions respectively on said objects being spaced from other sets of said adjacent regions in a direction generally perpendicular to the optical axis of said device; said device comprising:

(a) a single magnifying image projecting optical system for forming enlarged and projected images of said objects including said sets of said adjacent regions; and

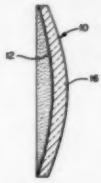
(b) a plurality of microscopes disposed with their optical axes spaced by a distance greater than the space between said any of said sets of said adjacent regions on said objects, each said microscope being positioned to observe the enlarged and projected images of one said set of said adjacent regions.

4,417,790

FINISHED OPHTHALMIC LENS COMPRISING AN OPTICAL SMOOTH COATING OVER A ROUGH-SURFACED BASE

W. Clifford Dawson, East Woodstock; George D. Bard, Brooklyn, both of Conn.; Luther W. Smith, Brimfield, and Bernard L. Laurin, Ludlow, both of Mass., assignors to American Optical Corporation, Southbridge, Mass.

Filed May 10, 1979, Ser. No. 37,786
Int. Cl.³ G02B 1/10; G02C 7/02
U.S. Cl. 351—166 13 Claims



1. An ophthalmic lens including substrate having a machined and unpolished rough surface and a finish thereover of optical smoothness, clarity and high scratch resistance comprising a coating selected from the group consisting of:

(a) a pigment-free aqueous coating composition comprising a dispersion of colloidal silica in lower aliphatic alcohol-water solution of the partial condensate of a silanol of the formula $RSi(OH)_3$ in which R is selected from the group consisting of alkyl radicals of 1 to 3 inclusive carbon atoms, the vinyl radical, the 3,3,3 trifluoropropyl radical, the gamma-glycidoxypropyl radical and the gamma-methzcryloxypropyl radical, at least 70 weight percent of the silanol being $CH_3Si(OH)_3$, said composition containing 10 to 50 weight percent solids consisting essentially of 10 to 70 weight percent colloidal silica and 30 to 90 weight percent of the partial condensate;

(b) a hydrolysis product of about 35 to 70 weight percent tetraethyl orthosilicate and 55 to 20 weight percent of a silane selected from the group consisting of methyltrimethoxysilane, methyltriethoxysilane, ethyltrimethoxysilane, ethyltriethoxysilane, dimethyldimethoxysilane, dimethyldiethoxysilane and mixtures thereof and up to 20 weight percent of a siloxane having a reactive polar site; and

(c) a mixture of one or more compounds selected from a group of compounds including one or both of epoxy group, and silanol and/or siloxane group (provided, in any case so selected that epoxy group, and silanol and/or siloxane group are included in the same molecule or different molecule); silica particles having a size of 1 to 100 microns; and an aluminum chelate compound of a general formula:

$$AlX_nY_{3-n}$$

wherein X is OL (L: lower alkyl), Y is at least a ligand derived from compounds of general formula $M^1COCH_2COM^2$ (M^1, M^2 both lower alkyl) and a ligand derived from compounds of general formula $M^3COCH_2COOM^4$ (M^3, M^4 both lower alkyl) and n is 0, 1 or 2.

8. The method of finishing an opthalmic lens having a machined and unpolished rough surface comprising the steps of:

coating said rough surface with a liquid pigment-free aque-

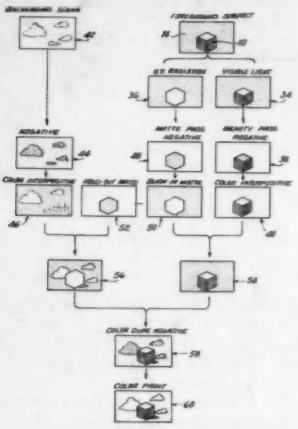
ous composition which is curable to external optical smoothness, clarity and high scratch resistance; and curing said coating.

4,417,791

PROCESS FOR COMPOSITE PHOTOGRAPHY

Jonathan Erland, 6026 Hayes Ave., Los Angeles, Calif. 90042, and Roger Dorney, 7057 Sunny Slope, Van Nuys, Calif. 91405

Filed Aug. 19, 1982, Ser. No. 409,749
Int. Cl.³ G03B 19/18
U.S. Cl. 352—45 9 Claims



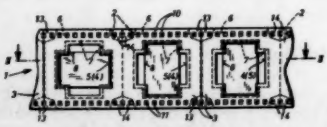
1. In a travelling matte process for composite photography, which comprises exposing a photosensitive medium to a foreground subject in front of a contrasting backing, printing high contrast black-and-white mattes therefrom, and printing images of the foreground subject in registration with said mattes and with a predetermined background scene to produce composite photographic images; the improvement comprising luminescing at least portions of the foreground subject during the exposure step at wavelengths actinic to said medium to form an image of solely said portions of the foreground subject in said medium, and printing said mattes from said image.

4,417,792

DEVICE FOR MOUNTING DIAPOSITIVES IN A STRIP AND AN APPARATUS FOR PROJECTING THE STRIP-MOUNTED DIAPOSITIVES

Liesel Martin, geb. Böser, Markschiedsweg 27, 6336 Solms/OT Oberbiel, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,333
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1980, 3021138
Int. Cl.³ G03B 23/08
U.S. Cl. 353—120 17 Claims



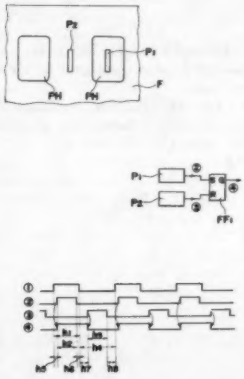
1. A film strip device for mounting a plurality of slide film sections in side-by-side relationship in a row to introduce successively the diapositives for projection in a slide projector and the like, comprising at least one first flexible sheet member having at least two picture openings therein in side-by-side relationship in a row, at least one second flexible sheet member similarly having at least two picture openings therein in side-by-side relationship in a row, said first and second sheet members being fastened to each other in face-to-face relationship with their respective picture openings being aligned and one of said sheet members overlapping the other sheet member by one picture opening such that a portion of one of said sheet members corresponding in length to one picture opening is not covered whereby a plurality of said first and second sheet members can be fastened to each other in alternating overlapping relationship to form a film strip of such a length to accommodate a predetermined number of slide films sections, a frame having a second picture opening therein interposed between said sheet members and having its second picture opening corresponding with aligned picture openings in said two sheet members, said frame picture opening being slightly larger than a diapositive to be positioned therein and larger than the sheet member picture openings, said frame having a thickness greater than that of the diapositive such that a diapositive is freely moveable within a said frame and has play between said sheet members, said sheet member picture openings being smaller in size than the individual slide film sections mounted in the film strip.

4,417,793

CAMERA CAPABLE OF FUNCTIONING IN ACCORDANCE WITH INFORMATIONS RECEIVED FROM A ROLL OF FILM

Shigeru Oyokota; Nobuyuki Taniguchi; Takeo Hoda; Junichi Tanii; Kiyoshi Seigenji, all of Sakai, and Toshiaki Matsumoto, Izumisano, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 25, 1982, Ser. No. 342,594
Claims priority, application Japan, Jan. 28, 1981, 56-11301
Int. Cl.³ G03B 1/66, 17/36; G01N 21/86; B65H 25/00
U.S. Cl. 354—21 16 Claims



1. In a camera capable of functioning in accordance with information received from a roll of film to be loaded in the camera, a sprocket hole detecting device comprising:

first and second detector means for generating a respective first electric signal and a second electric signal each changing between a first state and a second state in response to respective passages of the sprocket holes of the film during the winding-up motion thereof, a time lag being provided between the change in the first electric signal and the change in the second electric signal, said first and second detectors operating such that the second signal changes from said first to second state and changes from said second state back to said first state within the period defined between the change in said first signal from said first to second state and the change from said second state back to said first state; and

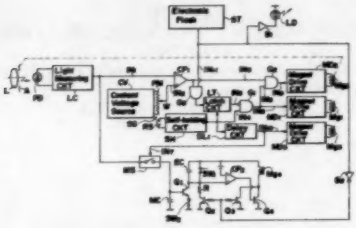
means for forming a sprocket hole signal indicative of the passage of sprocket holes in response to said first and second electric signals.

4,417,794

AUTOMATIC DIAPHRAGM CONTROL CAMERA

Masaaki Nakai, Nara, and Masayoshi Sahara, Sennan, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jul. 7, 1982, Ser. No. 395,992
Claims priority, application Japan, Jul. 16, 1981, 56-110071
Int. Cl.³ G03B 7/09, 7/16
U.S. Cl. 354—38 7 Claims



1. A camera for use with a flash device capable of generating a flash readiness signal, comprising:
an objective;
a diaphragm normally retained in a fully opened aperture position;
discrimination means including means for measuring light through said objective and diaphragm aperture and determining whether said diaphragm is to be set to the fully opened aperture position, based on the light measured through said objective and said diaphragm, a set film sensitivity and a set shutter speed, and generating a diaphragm stopping-down prevention signal when it is determined that said diaphragm is to be set to the fully opened aperture position;
diaphragm stopping-down release means for allowing stopping-down of said diaphragm in response to a camera release operation;
first diaphragm release control means for deactivating said diaphragm stopping-down release means in response to said diaphragm stopping-down prevention signal from said discrimination means; and
second diaphragm release control means for overriding said first diaphragm release control means in response to said flash readiness signal from said flash device.

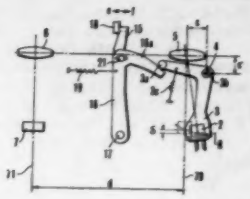
4,417,795

AUTOMATIC FOCUS DETECTION DEVICE

Shuichi Tamura, Yokohama; Toyotosi Suzuki; Hideo Tamamura, both of Tokyo, and Mutsuhide Matsuda, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 191,429, Sep. 29, 1980, abandoned. This application Apr. 2, 1982, Ser. No. 364,882
Claims priority, application Japan, Oct. 8, 1979, 54-129645
Int. Cl.³ G03B 3/10
U.S. Cl. 354—25 16 Claims

1. An automatic focus detecting device comprising:
two image forming lenses having optical axes fixedly spaced a predetermined distance and forming respective focal points;
distance measuring elements, each arranged in the neighborhood of the focal point behind each image forming lens;
a holding member for holding one of the distance measuring elements;
a shaft outside of the space between the optical axes of the two lenses, said holding member being rotatable around the shaft so as to alter the distance between the distance



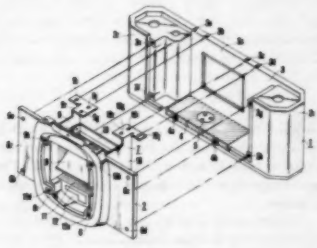
measuring element and the image forming lens, said distance measuring element held by said holding member being spaced radially from said shaft.

4,417,796

SINGLE LENS REFLEX CAMERA BODY

Yoji Sugiura, Yokohama; Toshio Hagiwara, Kawasaki; Toru Okumura, Yokohama, and Syunichi Nakahara, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Filed Nov. 4, 1981, Ser. No. 318,159
Claims priority, application Japan, Nov. 6, 1980, 55-156316; Nov. 6, 1980, 55-156317; Nov. 6, 1980, 55-156318
Int. Cl.³ G03B 17/02, 19/12
U.S. Cl. 354—152 10 Claims



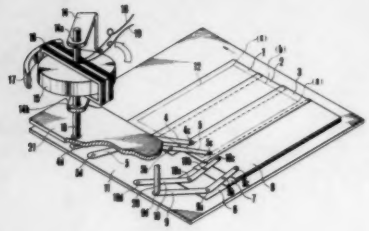
1. A single lens reflex camera assembly comprising:
a camera main body formed of plastic material structured to define
a film cartridge chamber,
a film take-up chamber,
a side wall portion having an aperture therethrough, and
an attachment portion;
a mirror box made of metal having
a mount attachment portion and
a complementary attachment portion formed in correspondence with said attachment portion of said camera main body;
a front panel of plastic material formed with a lens mount attachment base for attachment of a photo-taking lens and wings, said front panel being integrally formed with said mirror box with a portion of said mirror box adjacent said mount attachment portion thereof being inserted into said lens mount attachment base of said front panel in a manner such that mount attachment portion is exposed; and
assembly means joining together said complementary attachment portion of said mirror box and said attachment portion of said camera main body, said assembly means coupling said front panel with said camera main body.

4,417,797

VARIABLE FORCE ELECTROMAGNETIC SHUTTER

Michio Senuma, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1981, Ser. No. 333,563
Claims priority, application Japan, Dec. 27, 1980, 55-186509
Int. Cl.³ G03B 9/08
U.S. Cl. 354—234 **6 Claims**



1. A focal plane shutter comprising leading and trailing groups of shutter blades, an electromagnetic drive source to drive said shutter blades from a travel start position to a travel end position to effect an exposure,

the electromagnetic drive source including a coil and a permanent magnet for producing a magnetic flux as well as a drive shaft connected to transmit rotation of one of the coil and magnet to the shutter blades; said permanent magnet being arranged relative to the coil so that the magnetic flux density distribution of the magnet produces a maximum magnetic flux density in the vicinity of the travel start position of the coil,

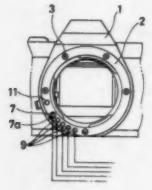
said electromagnetic drive source further including a yoke forming a gap with the magnet; and the magnetic flux density distribution of the magnet is adjusted by varying the gap formed between the permanent magnet and said yoke.

4,417,798

DATA TRANSMITTING ELECTRICAL CONTACT MEANS SWITCHING DEVICE IN CAMERA

Zenichi Ohkura, Ichikawa, and Yasuyuki Haneishi, Tokyo, both of Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 2, 1981, Ser. No. 269,098
Claims priority, application Japan, Jun. 6, 1980, 55-79057[U]
Int. Cl.³ G03B 9/02, 17/00
U.S. Cl. 354—271 **4 Claims**



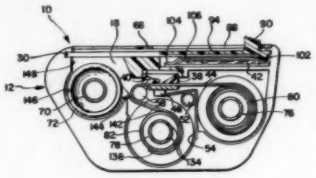
1. A data transmitting electrical contact switching device for a camera comprising: first and second switching electrical contacts provided on a lens mount and a body mount, respectively, at positions such that said first and second switching electrical contacts are adjacent one another when said lens mount is operatively coupled to said body mount; means for urging said first switching electrical contact on said lens mount side elastically to protrude from a surface of said lens mount, said second switching electrical contact on said body mount side being recessed from a surface of said body mount opposite said first switching electrical contact; a switching plate supporting said first switching electrical contact; an aperture preset ring having an elongated groove formed therein and a notch extending from said elongated groove; a pin provided at an end portion of said switching plate, said pin abutting against a side wall of said elongated groove to prevent protrusion of said first switching electrical contact on said lens mount side for a manual aperture control mode position of said aperture preset ring and said pin being fitted into said notch in an automatic aperture control mode position of said aperture preset ring so that said first switching electrical contact on said lens mount side protrudes from said lens mount surface so as to be in contact with said second switching electrical contact on said body mount side.

4,417,799

DISPOSABLE MANUALLY OPERABLE FILM PROCESSOR

Loring K. Mills, Hampton, N.H., assignor to Polaroid Corporation, Cambridge, Mass.

Filed Sep. 3, 1982, Ser. No. 414,794
Int. Cl.³ G03D 5/06
U.S. Cl. 354—304 **19 Claims**



1. A disposable, manually operable, film processor of the type specifically constructed to be disposed of after its processing materials have been depleted, the processor being adapted for use in the processing of a length of photographically exposed, self-developing type film, said film processor comprising:

a housing defining a lighttight chamber, said housing including means defining a loading door which is movable from a closed position to an open position for providing access to said chamber, said housing including a pair of spaced side walls;

a first roller rotatably supported within said chamber by said side walls for rotation in first and second directions, said first roller including drivable means accessible exteriorly of said processor and adapted to be engaged by a manually operable member for rotating said first roller in said first direction;

a length of sheet material having first and second opposite ends, said length of sheet material being wound upon said first roller with said first end secured to said first roller and said second end being attached to a second roller;

a second roller rotatably supported within said chamber for rotation about its axis, said second roller including drivable means accessible exteriorly of said processor and adapted to be engaged by a manually operable member for rotating said second roller;

means for supporting a film assemblage of the 35 mm type containing a cassette having therein a roll of exposed self-developing type film including a leader which is adapted to extend to the exterior of the cassette via a slot therein for attachment to said second roller;

a supply of processing composition;

an applicator mounted in said chamber in communication with said supply of processing composition for applying a coating to one side of said sheet material; and

a manually operable member engageable with said drivable means of said second roller for rotating it in a direction,

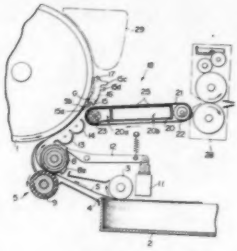
after said loading door has been moved to said closed position, so as to unwind said sheet material from said first roller and move it past said applicator where a coating of said processing composition is applied to one side of said sheet material, said rotation of said second roller also being effective to withdraw the exposed film from its cassette and wind it upon said second roller in engagement with the coated surface of said sheet material so as to form a laminate which is to remain wound upon said second roller for a period of time sufficient for visible images to be formed in the film.

4,417,800

IMAGE TRANSFER MATERIAL SEPARATION APPARATUS FOR ELECTROPHOTOGRAPHIC COPYING MACHINE

Akira Hirose, Tokyo, and Kenzo Ariyama, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Jul. 31, 1981, Ser. No. 288,784
Claims priority, application Japan, Aug. 1, 1980, 55-105972
Int. Cl.³ G03G *15/14, 15/22*
U.S. Cl. 355—3 TR **28 Claims**



1. An apparatus for separating image transfer material brought into close contact with a photoconductor having an image formed thereon, comprising:

a leading-edge-portion-lifting-and-deforming means for deforming a leading edge portion of said image transfer material as it is being directed to said photoconductor to lift the same from said photoconductor;

means including an image transfer material separation member having a base portion thereof swingably supported and the free end portion thereof disposed in close proximity to the surface of said photoconductor, said member including a catching portion for catching the deformed portion of the image transfer material so that after the deformed leading edge portion of said image transfer material comes into contact with said catching portion, the free end portion of said image transfer material separation member is caused to rotate in such a direction as to move away from the surface of said photoconductor by the advancing force of said image transfer material to gradually separate said image transfer material from the surface of said photoconductor and guide the leading edge of said image transfer material in such a direction so as to be separated from the surface of said photoconductor;

said image transfer material separation member having a gap formation means for continually maintaining a gap between the free end of said image transfer material separation member and the surface of said photoconductor, said gap formation means including an auxiliary sheet separation device having a base portion swingably supported independently of said image transfer material separation member and a free end portion having a pawl means for catching a leading edge of any image transfer material not caught by said image transfer material separation member, said pawl means adapted to ride in contact along a rim portion of said photoconductor, and a portion of said image transfer material separation member engaging said auxiliary device to be held thereby in a manner continually holding said member in spaced relation from said photoconductor, and

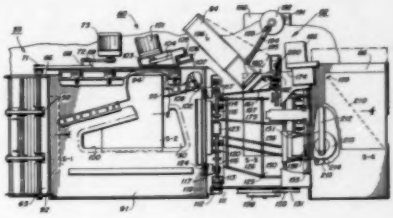
an image transfer material catching and transportion means disposed near the free end of said image transfer material separation member for catching and transporting the image transfer material after its transportion direction has been changed.

4,417,801

SHEET REGISTRATION IN A FINISHING STATION

Richard E. Eisemann, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 89,334, Oct. 30, 1979, abandoned. This application Nov. 19, 1981, Ser. No. 322,828
Int. Cl.³ G03G *15/00, 21/00*
U.S. Cl. 355—3 SH **2 Claims**



1. In an electrostatographic reproduction system having a document handling apparatus for advancing individual document sheets from a stack to an exposure station and return to the stack in repeated cycles, an electrostatographic processor for processing copy sheets, and an arrangement for registering each copy sheet as the same is moved in a path of movement to a sheet attaching station, the improvement comprising,

a transport assembly adapted to convey each sheet and to register the same in coarse registration along a side edge thereof during movement of the sheets therethrough,

collecting means in said path of movement arranged to receive the copy sheets from said transport assembly and adapted to register each sheet along said side edge and the leading edge thereof and to provide final conditioning of a collected set of copy sheets prior to attaching the sheets of the set, said collecting means adapted to arrest movement of each sheet in preparation of a stapling action.

4,417,802

PARTICLE DISPENSER

Richard L. Forbes II, Walworth, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 19, 1981, Ser. No. 322,999
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 DD **8 Claims**

1. An apparatus for dispensing particles including:

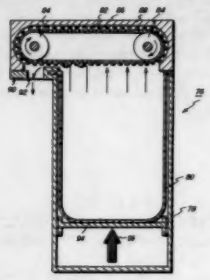
a substantially rigid container;

a flexible container disposed interiorly of said rigid container housing the supply of particles therein;

means for discharging particles received from said rigid container in a substantially downwardly direction;

means for transporting a portion of the particles from the uppermost portion of said rigid container to said discharging means; and

means for moving said flexible container relative to said rigid container in an upwardly direction to maintain a



continuous supply of particles in communcation with said discharging means.

4,417,803

PRESSURE FIXING DEVICE

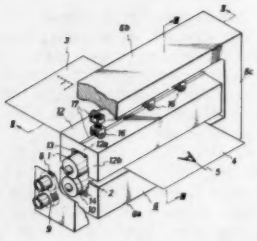
Masato Kobayashi; Yasushi Hoshino; Kazuyoshi Tateishi, all of Yokosuka; Minoru Isobe, Tokyo; Hiroshi Konishi, Tokyo; Yoshitomo Koga, Tokyo, and Shigemi Hagiwara, Tokyo, all of Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed May 26, 1982, Ser. No. 382,152

Claims priority, application Japan, Jun. 3, 1981, 56-084500

Int. Cl.³ G03G *15/20*

U.S. Cl. 355—3 FU **5 Claims**



1. A device for the pressure fixing of a toner comprising a pair of fixing rolls arranged axially in parallel to each other, said rolls fixing a toner image on an image record carrier by applying pressing forces to said record carrier between said rolls, a frame supporting individually and rotatably the axles of said rolls and forming a housing, a pressure bar giving a distributed load to said fixing rolls, and a plurality of pressure generators disposed within a space formed by said frame and said pressure bar, said pressure generators giving pressing forces to said pressure bar and being arranged displaceably in the axial direction of said rolls depending upon the width of said image record carrier.

4,417,804

HIGH VOLTAGE COMPARATOR FOR PHOTORECEPTOR VOLTAGE CONTROL

Alan J. Werner, Jr., Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 19, 1981, Ser. No. 275,174

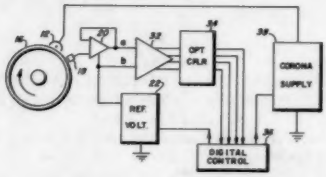
Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 CH **12 Claims**

1. An automatic electrostatic voltage control system for use with the electrophotography apparatus for directly comparing a reference supply with the voltage on a photoreceptor surface, the control having a high voltage supply to maintain the surface at a preset fixed potential comprising:

a detector electrostatically coupled to the surface to produce a control signal indicative of the polarity of the voltage difference of the surface relative to the present fixed potential,

a comparator, a premaplifier interconnecting the detector and the comparator, and



a digital control connected to the output of the comparator and to the high voltage supply, the digital control responding to the output of the comparator to supply a corresponding voltage to the high voltage supply to cause the supply to maintain the surface at the preset fixed potential.

4,417,805

IMAGE SYNTHESIZING DEVICE

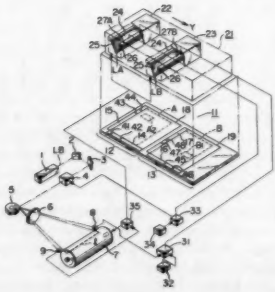
Hirotoshi Kishi, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1981, Ser. No. 298,459

Claims priority, application Japan, Sep. 8, 1980, 55-125112

Int. Cl.³ G03G *15/04*; H04N *1/30*

U.S. Cl. 355—14 R **14 Claims**



1. An image synthesizing device comprising an original table, means for reading an original on said original table, means for selecting an unnecessary area of the original, means for selecting a necessary area of an original to be synthesized in said unnecessary area, means for comparing the sizes of said selected unnecessary area and said necessary area, and means for controlling magnification of readout signals of said necessary area if the sizes of said unnecessary area and said necessary area do not match.

4,417,806
METHOD FOR EFFECTING REGISTRATION FOR A COPYING APPARATUS

Tatsuo Tani, Tokyo, and Masao Kono, Yokohama, both of Japan, assignors to Ricoh Company, Ltd., Japan

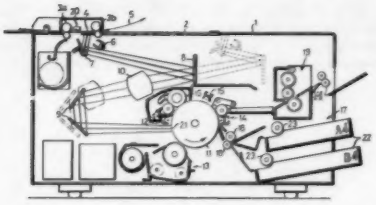
Continuation of Ser. No. 55,154, Jul. 6, 1979, abandoned. This application Nov. 6, 1981, Ser. No. 319,108

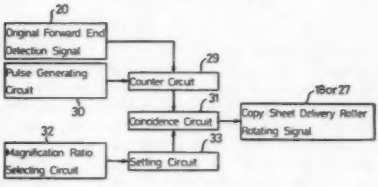
Claims priority, application Japan, Mar. 18, 1977, 52-29337; Mar. 22, 1977, 52-30483; Apr. 20, 1977, 52-44539; Apr. 22, 1977, 52-45871

The portion of the term of this patent subsequent to Aug. 12, 1997, has been disclaimed.

Int. Cl.³ G03G *15/22*

U.S. Cl. 355—14 SH 2 Claims





1. In an electrophotographic copying apparatus having a magnification ratio varying device, and in which a seamless photosensitive drum member (11) in motion and at any rotational position is exposed to an optical image of an original, by slit exposing, to form an electrostatic latent image thereon, with the scanning velocity of the original being adjustable in accordance with the selected magnification ratio, an improvement for effecting registration, consisting essentially of:

first detection means having only a single stationary detector (20), for detecting the leading end of the original in one of a path of travel of the original and a path of travel of a movable optical system, to produce one detection signal;

means (18) responsive only to said one detection signal connected to said first detection means to deliver a copy sheet to the photosensitive member (11) only after the lapse of a predetermined period of time following the production of said one detection signal, which predetermined period of time is varied in conformity with the selected magnification ratio;

time period varying means (32,39) connected to said responsive means for varying the predetermined period of time; and

other means responsive to a second signal (52) to perform other operations necessary for effecting electrophotographic copying other than said copy sheet delivering operation.

4,417,807
CLEANING APPARATUS FOR RECORDING APPARATUS

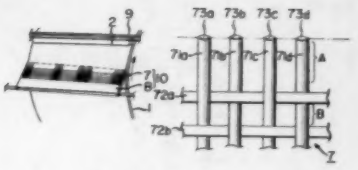
Yoshio Yamazaki; Ken Nakamura, and Shigeru Inowa, all of Hachinji, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Aug. 19, 1981, Ser. No. 294,393

Claims priority, application Japan, Sep. 10, 1980, 55-126412

Int. Cl.³ G03G *21/00*

U.S. Cl. 355—15 14 Claims



1. A cleaning apparatus for a recording apparatus which includes a photosensitive toner retaining member and a toner collection means, the cleaning apparatus comprising:

means for cleaning toner remaining on the photosensitive toner retaining member; and

a toner guide member having a plurality of spaced apart flexible front contact end portions in contact with said photosensitive toner retaining member for guiding said toner which is cleaned from said photosensitive toner retaining member to said toner collection means, at least the flexible front contact end portions of said toner guide member which are in contact with said photosensitive toner retaining member being in a comb-teeth shape.

4,417,808
PHOTOGRAPHIC PAPER CUTTER

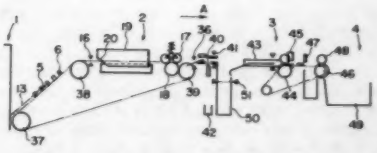
Mikio Kogane, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 30, 1982, Ser. No. 363,734

Claims priority, application Japan, Apr. 1, 1981, 56-49196

Int. Cl.³ G03B *29/00*

U.S. Cl. 355—29 10 Claims



1. A photographic paper cutter, comprising; a cutting station, a photographic paper guide clip for transporting a strip of photographic paper, guide means for feeding to said cutting station said photographic paper guide clip while engaging a leading edge of said strip of photographic paper, a photographic paper guide clip cutter for separating said photographic paper guide clip by cutting said strip of photographic paper engaged by said photographic paper guide clip fed by said guide means, separating and guiding means for causing said separated photographic paper guide clip to drop from a travel path of said paper, and for guiding the leading edge of said cut strip of photographic paper, and an image frame cutter for cutting said strip of photographic paper guided by said separating and guiding means into individual image frames.

4,417,809
PATTERN SCANNING DEVICE FOR COPYING MACHINES

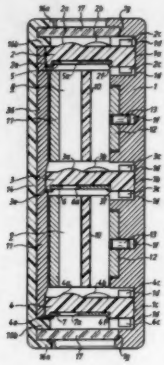
Joachim Nötzel; Anton Schätz, both of Munich; Harthmuth Buczek, Altenerding, and Günther Kirchhof, Taufkirchen, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 116,872, Jan. 30, 1980, abandoned. This application Feb. 12, 1982, Ser. No. 348,453

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1979, 2905740

Int. Cl.³ G03B *27/44*

U.S. Cl. 355—46 15 Claims



1. A pattern scanning device for copying machines of the type in which a pattern is projected in a striplike manner by a plurality of elongated pattern scanning lens plates on an image recording support whereby the scanning lens diaphragms, the copying machine being provided with adjustable supports, the scanning device comprising an objective housing including two parts assembled into a unit detachable from the copying machine, said housing parts being spaced from one another so as to form longitudinal mounting grooves to receive the lens plates and the diaphragms therebetween, one of said housing parts engaging respective longitudinal edges of said lens plates and being formed with transversal guiding grooves provided in parallel planes for all said lens plates and operative for guiding respective lens plates when the latter are inserted into said housing; said lens plates being each formed with centering means projecting into the respective guiding groove and adapted for permitting limited displacement of the respective lens plate in its longitudinal direction within the respective longitudinal mounting groove, the centering means of all lens plates arresting all of said lens plates at single points lying in said parallel planes extending perpendicularly to the elongation of said lens plates; and securing means for securing said lens plates and said diaphragms in a fixed position, the other housing part sealingly closing said one housing part.

4,417,810
METHOD FOR OBTAINING A COMPOSITE COLOR PICTURE AND A CAMERA EMPLOYING THE SAME

Yoshihiro Ueda, Shiga; Yoshikazu Kimura, Kusatsu; Hiroyuki Yonehara, and Kenjiro Tanabe, both of Hikone, all of Japan, assignors to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed May 7, 1980, Ser. No. 147,596

Claims priority, application Japan, May 7, 1979, 54-55424

Int. Cl.³ G03B *27/58, 27/52, 27/32*

U.S. Cl. 355—74 14 Claims

1. A duplicating camera for producing a color composite picture out of a plurality of original color pictures with a desired layout arrangement, comprising,

an original picture frame holding a plurality of original color pictures side by side on a single plane,

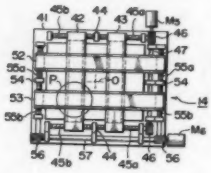
an original picture carriage supporting the original picture frame in a direction perpendicular to the plane on which the original pictures are mounted,

rotation means for rotatably supporting said frame at corners thereof to permit rotation of said pictures about an axis normal to said plane,

a means for successively moving the original picture frame across the optical center line of the duplicating camera, said rotation means supporting said moving means and being configured for clearance of said moving means to permit independent operation of said rotation means and said moving means while said original picture is oriented normally to said axis,

a light source for illuminating the color original picture which is placed on the optical center line,

a lens carriage comprising an optical system for producing the image of the original picture which is placed on the optical center line of the camera on its focal plane,



an exposure control device,

a cabinet which supports photosensitive material on the focal plane of the duplicating camera in such a manner that a desired point on the photosensitive material may be aligned on the optical center line of the duplicating camera for each of the original pictures,

a masking device having a variable light transmitting area over the photosensitive material surface having the lens carriage,

the masking device being provided with a light shielding screen which may be extended to or retracted from the central portion of the masking device on each side of the frame of the masking device,

the forward end of the light shielding screen being provided with a flat bar having knife edges, each pair of the neighboring flat bars with knife edges being slideably engaged one over another with their broader surfaces contacting back to back, and

a color compensating means adapted to be selectively actuated for each of the original pictures.

4,417,811
METHOD AND DEVICE FOR MAKING PHOTOGRAPHIC COPIES

Rudolf Hamer, Heintzmannstr. 166, 463 Bochum , BRD, Fed. Rep. of Germany

Filed Jun. 2, 1981, Ser. No. 269,826

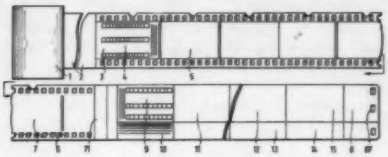
Claims priority, application Fed. Rep. of Germany, Dec. 7, 1979, 2949290

Int. Cl.³ G03B *27/32*

U.S. Cl. 355—77 2 Claims

1. A method for making positive photographic copies from uncut negative film strips which at the first order are stored in a camera cartridge in the undeveloped condition and are delivered with an order pocket which carries the general order data, comprising the steps of developing the negative film strips; making during the first order processing a positive strip copy, without making enlarged prints, including pictures of

data fields arranged in conjunction with the individual positive pictures of the negative film strip for receiving relevant film processing data readable by a data processing machine; connecting the positive strip copy with one end of the developed negative film strip; and upon completion of the first order, connecting the other end of the developed negative strip with



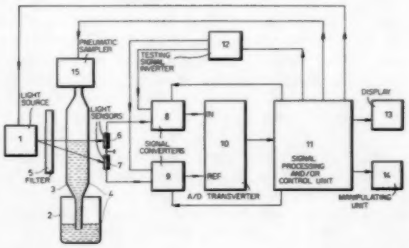
an auxiliary strip in the file cartridge to form a permanent file unit so that when it is necessary to make a reorder, it suffices to withdraw from the file cartridge only the positive strip copy with the individual positive pictures and the data fields to be read by a machine, while the negative film strip is withdrawn from the file cartridge only for making positive copies according to the reorder.

4,417,812

CIRCUIT ARRANGEMENT FOR DETERMINING THE CHARACTERISTICS OF LIQUIDS AND/OR GASES, IN PARTICULAR THE HEMOGLOBIN CONTENT OF THE BLOOD

Laszlo Cserey; Gabor Horvath; Tamas Szabados; Sandor Simonkay; Janos Sztipanovits; Pal Vimlati; Zoltan Istvan, and Pal Zillich, all of Budapest, Hungary, assignors to Medicor Muvek, Budapest, Hungary

Filed Mar. 3, 1981, Ser. No. 240,177
Int. Cl.³ G01N *33/28, 21/27*
U.S. Cl. 356—40 **3 Claims**



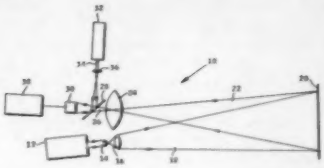
1. A circuit arrangement for determining the characteristics of fluids, comprising a double-light optical system (1), a measuring cuvette (3), an interference filter (5) disposed between the optical system and the cuvette and through which both lights from the optical system pass, two light sensing elements (6 and 7), two current-to-voltage converters (8 and 9), an A/D signal transverter (10), a signal processing and/or control unit (11), a testing D/A inverter (12), a display (13), a manipulating unit (14), and an automatic sampler (15), the cuvette dipping into a recptacle (2) for a fluid (4) to be tested, one of said lights passing through said cuvette (3) and striking one (6) of said light sensing elements, the other of said lights bypassing said cuvette (3) and striking the other (7) of said light sensing elements, said one (6) light sensing element being connected to an input of one (8) of said converters, said other (7) of said light sensing elements being connected to an input of the other (9) of said convertors, an output of each of said converters (8,9) being connected to a respective input of said signal transverter (10) which is in turn connected to an input of said signal processing and/or control unit (11), said signal processing or control unit (11) having separate outputs connected to said display (13) and to said manipulating unit (14) and to said optical system (1) and to said inverter (12) and to said sampler (15) and to each of said converters (8, 9), said inverter (12) also having separate outputs one connected to each of said converters (8, 9), said automatic sampler (15) having an output connected to said cuvette.

4,417,813

NON-SCANNED HETERODYNE IMAGING SENSOR

Bruce J. Bartholomew, Poway, Calif., assignor to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Sep. 11, 1981, Ser. No. 301,265
Int. Cl.³ G02B *9/02*
U.S. Cl. 356—349 **4 Claims**



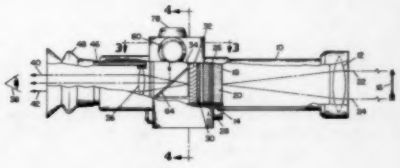
1. A non-scanning heterodyne imaging sensor comprising
a first source of coherent light,
means directing a beam from said first source of coherent light for illuminating an object,
a photodetector,
means directing a beam of the reflection of said object onto said photodetector,
a second multi-frequency coherent light source,
means directing light from said multi-frequency light source onto said photodetector concurrently with the reflected beam of said object for providing a plurality of points on said photodetector each with a different frequency,
means for sensing each of said points on said photodetector to provide an image of said object.

4,417,814

NIGHT SIGHT WITH ILLUMINATED AIMING POINT

Darrel Doliber, Tempe, Ariz., assignor to Litton Systems, Inc., Beverly Hills, Calif.

Filed Sep. 23, 1980, Ser. No. 190,007
Int. Cl.³ G02B *23/10, 27/34*
U.S. Cl. 356—252 **13 Claims**



1. A night sight comprising:
(a) an image intensifier tube having an image input surface and image output surface;
(b) first lens means for imaging a viewed scene onto said input surface;
(c) second lens means for projecting to a viewer an output image of said scene formed at said output surface;
(d) means, including a light source, for providing an illuminated aiming mark;
(e) beam combiner means for directing light from said aiming mark along an optical axis through said second lens

means to said viewer so as to superimpose an image of said aiming mark onto said output image projected to said viewer;

(f) a housing for mounting and protecting the other components of said nightsight; and

(g) means for translating said image of said aiming mark in elevation and windage including

(1) a light source support block for holding said aiming mark;

(2) guide surfaces integral with said housing upon which said support block slides in one or the other of two mutually orthogonal directions;

(3) means, including an elevation adjustment knob, for controllably moving said support block in one of said directions so that said image of said aiming mark seen by said viewer moves in a vertical direction; and

(4) means, including a windage adjustment knob for controllably moving said support block in the other direction, so that said image of said aiming mark seen by said viewer moves in a horizontal direction.

4,417,815

MEASURING APPARATUS

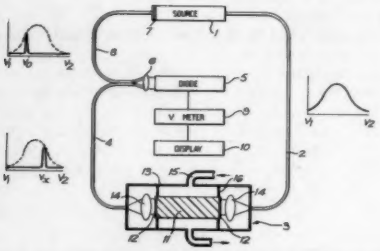
Robert T. Murray, Helsby, England, and Daniel J. Bradley, Dublin, Ireland, assignors to Imperial Chemical Industries PLC, London, England

Filed Dec. 8, 1981, Ser. No. 328,710

Claims priority, application United Kingdom, Dec. 17, 1980, 8040393

Int. Cl.³ G01B 9/02

U.S. Cl. 356—349 **10 Claims**



1. Apparatus for measuring or detecting changes in a physical or chemical parameter comprises:

a light source,

an interferometer having variable interference means positioned to receive light from the source and to transmit a portion of that light at a discrete frequency which is variable over a range of frequencies within the source bandwidth,

means for applying the parameter to the interference means thereby to vary the transmission frequency as a function of changes in the parameter,

means for beating the transmitted frequency with a reference frequency taken coherently from the same light source, and

detection means for measuring or detecting changes in the beat frequency thereby produced.

4,417,816

LASER MEASURING SYSTEM AND METHOD FOR TURNING MACHINE

George F. Kindl, Newington; Orean E. Michaud, Bristol, and Joseph E. Brien, East Hartford, all of Conn., assignors to Colt Industries Operating Corp., West Hartford, Conn.

PCT No. PCT/01043, § 371 Date Aug. Aug. 11, 1980, § 102(e) Date Aug. 11, 1980, PCT Pub. No. WO82/00514, PCT Pub. Date Feb. 18, 1982. This application filed Aug. 11, 1980, Ser. No. 277,651

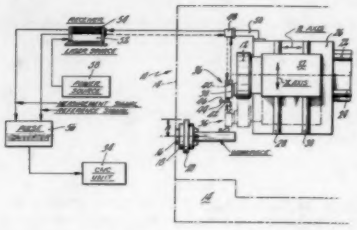
Int. Cl.³ G01B 11/10

U.S. Cl. 356—357 **10 Claims**

1. In an optical workpiece measuring system for a turning machine having: a frame; a spindle mounted for rotation upon the frame and having a chuck secured thereto for rotation therewith; a Z-axis slide mounted upon the frame for movement along an axis parallel to the spindle axis; an X-axis slide carried by the Z-axis slide for movement along an axis transverse to the spindle axis; and a turret mounted upon the X-axis slide for rotation to a plurality of discrete index stations; the improvement comprising:

a gage head having a movable probe adapted to engage a surface of the workpiece and a reflector movable with the probe for receiving and reflecting a laser measurement beam;

a bracket connected to the gage head, and an index position on the turret for securing the gage head to the turret such



that when the turret is in a measuring index station the probe is adapted to be aligned with a diameter of the workpiece;

an interferometer for splitting a laser beam into a reference beam and the measurement beam and for reuniting the reference beam and the measurement beam to form a return beam, the interferometer being mounted upon the Z-axis slide such that it is in optical alignment with the reflector when the turret is in the measuring index station;

a laser transducer adapted to generate the laser beam positioned in optical alignment with the interferometer; and

a receiver for receiving the return beam and generating a measurement signal positioned in optical alignment with the interferometer.

4,417,817

VOLUMETRIC MEASUREMENT OF PARTICLES

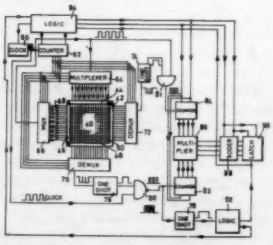
Rolf C. Böhme, Kyalami; Ian D. van Zyl, Bandburg, and Max M. Lazerson, Northcliff, all of South Africa, assignors to General Mining Union Corporation, Limited, South Africa

Filed Jan. 26, 1981, Ser. No. 229,053

Claims priority, application South Africa, Jun. 19, 1980, 80/3656; Jul. 15, 1980, 80/4250

Int. Cl.³ G01B 11/28, 11/00

U.S. Cl. 356—380 **9 Claims**



1. Apparatus for obtaining a volumetric measurement of an article comprising a radiation imaging structure having a first

plurality of collimated radiation sources arranged to irradiate in a first direction a portion of the article within a zone, a first plurality of radiation detectors each of which is responsive to the radiation from a respective one of the first plurality of sources,

first counting means for determining the number of said first plurality of sources whose radiation impinges on the article thereby to derive a first measurement of a projection of a first dimension of the article in said first direction,

a second plurality of radiation sources arranged to irradiate the portion of the article within said zone in a second direction, a second plurality of radiation detectors each of which is responsive to the radiation from a respective one of the second plurality of sources,

second counting means for determining the number of said plurality of sources whose radiation impinges on the article thereby to derive a second measurement of a projection of a second dimension of the article in said second direction,

first and second multiplexing means for sequentially driving said first and second pluralities of radiation sources, respectively, to generate sequential radiation beams,

first and second demultiplexing means synchronized with said first and second multiplexing means, respectively, for sequentially sampling said first and second pluralities of radiation detectors to provide respective signals to said first and second counting means representing the number of sources of said first and second pluralities of sources whose radiation impinges on the portion of the article,

multiplying means for obtaining the product of the numbers in said first and second counting means thereby to derive a measurement of the volume of the portion of the article within the zone,

accumulating means for accumulating measurements of the volume portions of the article thereby to derive a volumetric measurement of the article, and

further comprising clock means generating a repetitive signal and a third counter means driven thereby for providing output signals controlling operation of said first and second multiplexing means and said first and second demultiplexing means.

4,417,818

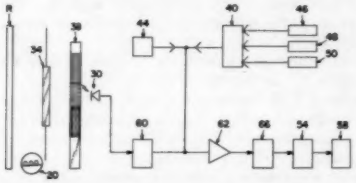
INTEGRATING DENSITOMETER

Ralph M. Weisner, 6447 Farralone Ave., Canoga Park, Calif. 91303

Filed Feb. 12, 1981, Ser. No. 233,785

Int. Cl.³ G01J *3/40, 3/48;* **G03B** *27/72*

U.S. Cl. 356—404 **8 Claims**



1. An integrating densitometer for evaluating a reference and a photographically processed test print made by a photographing printing system, prior to making another print comprising: a light source; light sensor means; a stage for supporting an image of a reference or the test print as illuminated by said light source wherein said sensor means responds to light rays along a light path as influenced by the image at said stage; a plurality of color filter means movable selectively into the light path between said light sensor means, and said stage for ascertaining at least trichromatic quantity and quality values of the image at said stage; circuitry including means for establishing electrical reference values for the quantity and quality of light impinging on the reference image at said stage for evaluation of said light sensor means, the electrical reference values representing the density and/or trichromatic quantity and quality of the light from the reference image at said stage; and density control means for biasing simultaneously said electrical reference establishing means to shift said trichromatic values proportionately as required to obtain equalization of the density value upon comparison of the reference and test print images wherein the differences in the density and/or the trichromatic values of the reference and the test print are introduced into the photographic printing system to generate another print.

4,417,819

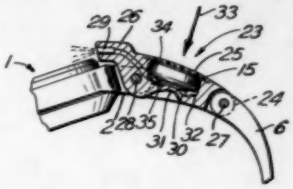
WATCHBAND LIGHT ATTACHMENT FOR A WRISTWATCH

Jean P. Migeon, Recologne, France, assignor to Timex Corporation, Waterbury, Conn.

Filed Jun. 30, 1982, Ser. No. 394,032

Int. Cl.³ G04B *19/30*

U.S. Cl. 368—67 **7 Claims**



1. In a wristwatch having a case with connection means for attachment of a watchband and containing a timepiece face portion to be illuminated, and a watchband having first and second attachment ends, at least said first end being attached to said connection means, the improvement comprising a self-contained illumination device removably held by said second attachment end of the watchband and having an overhanging portion extending beyond said connection means and carrying a lamp arranged to illuminate said face portion, said illumination device defining a cavity, a battery disposed in said cavity having a pair of battery terminals, a pair of lamp terminals disposed in said cavity connected to said lamp a portion of the wall of said cavity being flexible and adapted to permit contact between at least one of said battery terminals and at least one of said lamp terminals when the illumination device is manually actuated.

4,417,820

TIME-KEEPING DEVICE, ESPECIALLY A QUARTZ-CONTROLLED CLOCK

Peter Busch, Fenin, Switzerland, and Horst Schaefer, Friedrichsdorf, Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Continuation of Ser. No. 202,385 filed as PCT DE79/00137, Nov. 15, 1979, published as WO80/01113, May 29, 1980, § 102(e) date Jun. 19, 1980, abandoned. This application Mar. 17, 1982, Ser. No. 358,934

Claims priority, application Fed. Rep. of Germany, Nov. 20, 1978, 2850295; Nov. 20, 1978, 2850325; Nov. 20, 1978, 2850357

Int. Cl.³ G04B *17/00, 17/12;* **G04F** *5/00*

U.S. Cl. 368—200 **5 Claims**

1. A quartz controlled timing device including a display system comprising:

an oscillator;

first and second electronic frequency divider stages, coupled to said oscillator for delivering a first pulse train having a first frequency;

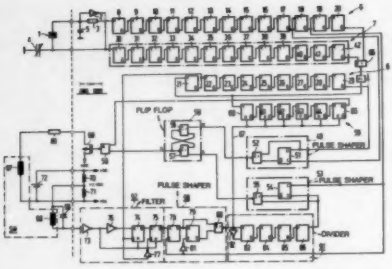
an electronically controlled motor, with a set rotational speed, having an operating winding which drives the display system and a pick-up winding detecting the rota-

tions of the motor and delivering a second pulse train having a second frequency;

means for converting said second pulse train into a third pulse train having approximately the same frequency as said first pulse train;

a flip-flop means having a first and second input and an output, said first input receiving said first pulse train from said electronic frequency divider stages, said second input receiving said second pulse train, said output providing a high level signal after a set pulse of the first pulse train has arrived from said frequency divider stages and a low level signal after a pulse of the third pulse train has arrived from said converting means;

a multi-stage frequency divider having two inputs and an output, said first input being connected with the output of the first electronic frequency divider stage for providing a third frequency, said second input receiving the second pulse train;



a gate means for providing a fourth pulse train having a fourth frequency and having a first and second input and an output, said output of said multi-stage frequency divider being connected to said first input of said gate means, said second input of which being connected to said output of said flip-flop means; and

an amplifier means responsive to the output pulses of said gate means for applying said fourth pulses from the output of said multi-stage frequency divider to the operating winding of said electronically controlled motor when the output of said flip-flop means is generating a high level output signal, thus accelerating said motor to a maximum of set rotational speed and for dropping a flow of current to said motor when the output of said flip-flop means is generating a low level output signal thus being only one rotational speed above the set rotational speed controllably adjustable.

4,417,821
WRIST WATCH

Wolfgang Herchenbach, Pforzheim, Fed. Rep. of Germany, assignor to Rodi & Wienenberger AG, Pforzheim, Fed. Rep. of Germany

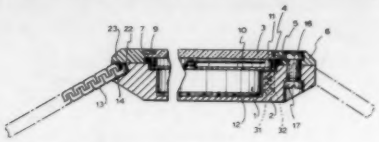
Filed Nov. 3, 1981, Ser. No. 317,928

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043263; Apr. 24, 1981, 3116306

Int. Cl.³ G04C *23/02*; G04B *37/08*

U.S. Cl. 368—291 **30 Claims**

1. A wrist watch, particularly a water-tight wrist watch, comprising a housing having a substantially cup-shaped lower housing part and a substantially frameshaped upper housing part connected with one another, said upper housing part having a collar-like portion; a watch mechanism received in said lower housing part; a watch glass having a step portion; a dial member; a spacer member having a wall; and an elastic element arranged in said lower housing part, said upper housing part pressing said watch mechanism via said watch glass, said spacer member and said dial member against said elastic member, and said collar-like portion of said upper housing part



extending over said wall of said spacer member and lying on said step portion of said watch glass.

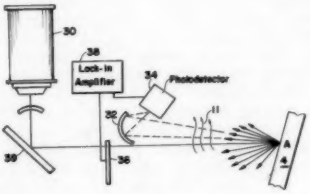
4,417,822
LASER RADIOMETER

Alexander Stein, Secaucus, N.J.; Paul Rabinowitz, Old Bethpage, N.Y., and Andrew Kaldor, Watchung, N.J., assignors to Exxon Research and Engineering Company, Florham, N.J.

Continuation-in-part of Ser. No. 229,172, Jan. 28, 1981, abandoned. This application Nov. 9, 1981, Ser. No. 319,244

Int. Cl.³ G01J *5/52, 5/62*

U.S. Cl. 374—129 **16 Claims**



1. A laser heterodyne temperature measuring device for temperature measurement of a remote radiant source, said device comprises:

a laser having a principal output at wavelength λ;

means for intercepting an amount of thermal radiation emitted from said radiant source;

means for superimposing said intercepted radiation with said laser signal;

a photodetector positioned to receive said superimposed radiation and laser output, said photodetector responding thereto to provide a subject electrical beat signal, a value of power for said signal being a known function of thermal radiance of remote source;

discriminator means being operative to distinguish a subject signal for unwanted noise signals;

means for illuminating at least a portion of said radiant source with said laser signal, whereupon an amount of said illuminating laser signal is diffusely reflected from a surface region of said radiant source;

means for detecting at least a portion of said diffusely reflected laser signal over a predetermined solid angle, said detecting means being responsive to provide a photoelectric signal which is a known function of emissivity for a surface region of said radiant source, said signal corresponding to a value of emissivity whereupon compensating said value of power for thermal radiance for said value of emissivity an accurate measurement of the temperature of the remote radiant source is provided, said detecting means collecting a plurality of speckle lobes of varying brightness of said reflected laser signal of sufficient number so as to obtain a spatial average over the intensity of said reflected laser signal.

4,417,823

HYDROSTATIC GUIDE BEARING OF A SEAT

Michel Drevet, Lyons, France, and Jean Trouillet, Fontaine-Valmont, Belgium, assignors to Jeumont Schneider Corporation, Puteaux, France

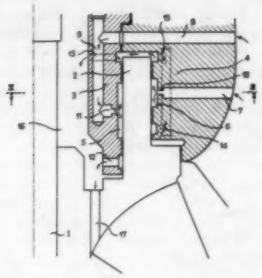
PCT No. PCT/FR80/00163, § 371 Date Jul. 6, 1981, § 102(e) Date Jul. 6, 1981, PCT Pub. No. WO81/01449, PCT Pub. Date May 28, 1981

PCT Filed Nov. 17, 1980, Ser. No. 281,190

Claims priority, application France, Nov. 20, 1979, 79 28524

Int. Cl.³ F16C *32/06*

U.S. Cl. 384—115 13 Claims



1. Hydrostatic guide bearing for a shaft having a journal in the form of a sleeve, characterized in that the bearing comprises a first and a second set of chambers disposed in concentric races respectively opposite the internal wall and the external wall of the said journal, and that the chambers of the said first set are angularly displaced with respect to the chambers of the said second set.

4,417,824

OPTICAL KEYBOARD WITH COMMON LIGHT TRANSMISSION MEMBERS

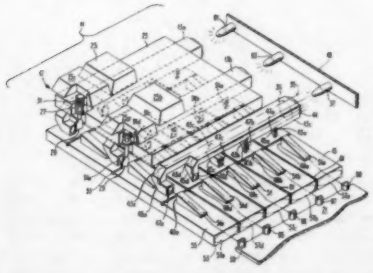
Robert L. Paterson, Nicholasville, and Jerry M. Sublette, Lexington, both of Ky., assignors to International Business Machines Corporation, Armonk, N.Y.

PCT No. PCT/US82/00379, § 371 Date Mar. 29, 1982, § 102(e) Date Mar. 29, 1982

PCT Filed Mar. 29, 1982, Ser. No. 375,799

Int. Cl.³ B41J *5/00*

U.S. Cl. 400—477 5 Claims



1. A keyboard comprising:

a plurality of keys arranged in an M row by N column matrix format;

a plurality of at least N light sources for generating N light beams, there being at least one light source for each column;

a first light transmission member having at least N common light transmission paths each for transmitting at least one of said light beams from one of said N light sources to M terminal points, there being a terminal point for each row;

a second light transmission member having at least M common light transmission paths, one for each row, each path having N light receptors, each N light receptor of a M light transmission path being aligned with a terminal point of a different light transmission path of said first light transmission member to form a light path therebetween;

a plurality of interrupters each responsive to the depression of different key and each uniquely located between a terminal point and corresponding light receptor for interrupting the light path therebetween upon key depression;

a plurality of M light sensors each aligned with a different one of said M light transmission paths for sensing the presence or absence of light transmitted along its associated second light transmission path;

logic means for timewise sequencing said light sources and for gating the output signals of said sensors to provide a logic indication indicating the depressed key;

wherein the improvement comprises:

said first light transmission member having a plurality of M reflecting surfaces along the transmission path of each of said N light beams, each reflecting surface deflecting a portion of its associated light beam vertically from its first plane of travel within said first transmission member to a second plane of travel within said first transmission member;

said first light transmission member having a second plurality of M reflecting surfaces for deflecting said portions of said light beams along a third plane of travel within said first transmission member vertically displaced from said first plane of travel and in a direction approximately orthogonal to the direction of travel of said light beam in said first plane of travel;

said second light transmission member having a plurality of at least N reflecting surfaces for each of said M light transmission paths for directing light from said light receptors to said light sensors along each M common light transmission path.

4,417,825

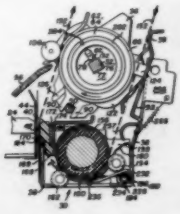
PRINT DRIVE MEDIUM FOR LINE/SERIES PRINTERS

James E. Cushman, San Jose; Mario G. Plaza, and Helmut K. Waibel, both of Fremont, all of Calif., assignors to Durango Systems, Inc., San Jose, Calif.

Continuation of Ser. No. 239,983, Mar. 3, 1981, abandoned. This application Apr. 7, 1983, Ser. No. 482,815

Int. Cl.³ B41J *15/00*

U.S. Cl. 400—605 19 Claims



1. An improved print medium driving mechanism adapted to advance individual cut sheets of print medium and a continuous web of print medium, said continuous web print medium having preformed lateral perforations uniformly spaced along its outer edges, the print medium driving mechanism including at least one rotatably driven spur drive member having a spur wheel with a plurality of spurs positioned equally about and projecting radially from its outer peripheral rim, said spur drive member being adapted for engaging continuous web

print medium about its lateral perforations and advancing said print medium uniformly along the path from its entry into the drive mechanism, through a printing station where it may be printed upon and thence of its departure from the drive mechanism wherein the improvement comprises:

a rotatably driven friction feed roller disposed upstream from the printing station and adapted to advance individual cut sheets of print medium into said printing station;

a plurality of pressure rollers individually shorter than and aligned coaxially with the friction feed roller, said pressure rollers being adapted to urge cut sheets of print medium into frictional engagement with said friction feed roller;

pressure means coupled to the pressure rollers and having a first position for maintaining the pressure rollers in a location immediately adjacent to and urged toward the friction feed roller whereby the pressure rollers may clamp cut sheets of print medium into frictional engagement with the feed roller, the pressure means having a second position for maintaining the pressure rollers in a location away from the friction feed roller whereby print medium is freed from frictional engagement with the feed roller;

at least one friction feed assembly including a driven friction feed wheel and a feed wheel pressure roller, the assembly further including force means having a first position for maintaining said feed wheel pressure roller in a location immediately adjacent to and urged towards said friction feed wheel whereby said feed wheel pressure roller may clamp cut sheets of print medium into frictional engagement with said friction feed wheel, said force means having a second position for maintaining said feed wheel pressure roller in a location out of said path along which a continuous web of print medium may be advanced by the spur drive member;

drive means for synchronously rotating the spur drive member, the friction feed roller and said friction feed wheel of the friction feed assembly; and

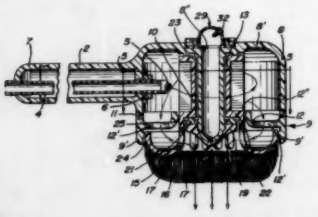
guide means for directing a continuous web or cut sheets of print medium along a path first directed toward the friction feed roller, thence passing between the friction feed roller and the pressure roller, thence passing through said printing station and last directed toward said friction feed wheel of the friction feed assembly.

4,417,826

LIQUID DRIVEN ROTARY BRUSH WITH LIQUID SOAP FEEDER

Constantinos Floros, 7475 Madrid St., Brossard, Canada J4Y 1G1

Filed Dec. 24, 1981, Ser. No. 334,306
Int. Cl.³ A46B *11/02, 13/06*
U.S. Cl. 401—41 **3 Claims**



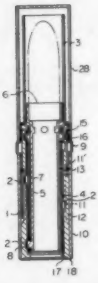
1. A rotary brush comprising a casing having a cylindrical wall and first and second end walls, each having a central aperture, said casing formed of two sections, each including an end wall and a portion of said cylindrical wall, means to interconnect said cylindrical wall portions in end-to-end relation, the section including the second end wall having a skirt projecting beyond said second end wall, a hollow handle secured to and laterally extending from said cylindrical wall, a water feed pipe extending within said handle, having an outer end formed with means for connection to a water supply under pressure and an inner end defining a nozzle directed within said Commissioner of Patents and Trademarks February 3, 1983 casing, a hollow shaft extending within and coaxial with said casing, said shaft having a first end fixed to said first end wall and surrounding the central aperture of the latter, and a free end portion extending through the central aperture of said second end wall and beyond the latter, said free end portion being closed, except for a small discharge opening, a paddle wheel including a hub and radial paddles, the hub mounted on said shaft with the paddles extending in said casing to be impinged upon and rotated by a water jet issuing from said nozzle, said hub having an extension protruding through said central aperture of said second end wall and defining a radially-outwardly extending annular shape brush bristle-carrying portion axially spaced from and overlying said second end wall and having a free circular edge portion in sliding and rotational engagement with said skirt, brush bristles carried by said bristle-carrying portion and extending therefrom in a direction away from said end wall, axially of said shaft, to form an annular brush with a central open space, said second end wall and said brush-carrying portion having a plurality of holes allowing water within said casing to flow into said central space, said small discharge opening exposed within said central space, a flexible cap closing the central aperture of said first end wall and the first end of said hollow shaft, and means to fill said hollow shaft with a liquid detergent, pressure exerted on said flexible cap causing detergent to flow into said central space through said small discharge opening.

4,417,827

STICK-TYPE COSMETIC APPLICATOR

Yutaka Kasai, Yokohama, and Satoru Naramoto, Kashiwa, both of Japan, assignors to Shiseido Company, Ltd., Japan

Filed May 11, 1981, Ser. No. 262,610
Claims priority, application Japan, May 20, 1980, 55-69061[U]
Int. Cl.³ A45D *40/06*
U.S. Cl. 401—68 **2 Claims**



1. A stick-type cosmetic applicator comprising:

a sliding sleeve having a solid cosmetic receiving portion for receiving a stick-type cosmetic extending from a first end thereof and having at least one radially extending projection on the outer surface near the second end thereof;

a guide sleeve surrounding said sliding sleeve from said second end to a point intermediate said first and second ends, having at least one longitudinal slot extending from an end of said guide sleeve proximate to said second end of said sliding sleeve, in which said radially extending projection of said sliding sleeve travels, said slot guiding said sliding sleeve and preventing rotation of said sliding sleeve with regard to said guide sleeve, and having an annular projection on the outer surface thereof;

a housing sleeve integrally formed with said guide sleeve,

surrounding said solid cosmetic receiving portion of said sliding sleeve and extending therefrom to house said stick-type cosmetic;

a driving sleeve surrounding said guide sleeve having at least one spiral groove for engagement with said radially extending projection of said sliding sleeve, said driving sleeve being rotatable about said guide sleeve and said sliding sleeve, and having an annular recess on the inner surface for engagement with said annular projection on said guide sleeve, an annular recess on the outer surface, a longitudinal projection on the outer surface and flanges on the inner and outer surfaces at the end distant from the cosmetic receiving portion of said sliding sleeve; said inner flange engaging said guide sleeve;

an intermediate sleeve fixedly installed on the outer surface of said driving sleeve and extending onto said housing sleeve having a longitudinal slot for engagement with said longitudinal projection of said driving sleeve and an annular projection;

an outer sleeve fixedly installed on said intermediate sleeve, secured between said annular projection of said intermediate sleeve and said flange on the outer surface of said driving sleeve, rotation of which is transmitted to said driving sleeve through said intermediate sleeve causing said radially extending projection to travel in said spiral groove, said sliding sleeve thereby travelling within said guide sleeve and said housing sleeve; and

a cap demountably installed on said intermediate sleeve surrounding said housing sleeve.

4,417,828

EROSION PROTECTION MAT

Jan G. de Winter, Enschede, Netherlands, assignor to Nicolon B.V., Enschede, Netherlands

Filed Sep. 9, 1981, Ser. No. 300,673

Claims priority, application Netherlands, Sep. 15, 1980, 8005159

Int. Cl.³ E02B *3/12*

U.S. Cl. 405—17 **7 Claims**

1. An erosion-protecting mat comprising a water-pervious tissue layer having anchoring loops projecting outwardly from at least one surface of the tissue, the anchoring loops being integral portions of a yarn woven across the tissue and periodically protruding from said surface of the tissue.

4,417,829

SAFETY DEVICE FOR UNDERGROUND STORAGE OF LIQUEFIED GAS

Georges Berezoutzky, Cesson, France, assignor to Societe Francaise de Stockage Geologique "Goestock", Paris, France

Continuation of Ser. No. 106,030, Dec. 21, 1979, abandoned. This application Feb. 17, 1982, Ser. No. 349,668

Claims priority, application France, Dec. 28, 1978, 78 36633

Int. Cl.³ B65G *5/00*

U.S. Cl. 405—54 **14 Claims**

1. An apparatus for underground storage of a liquefied gas in a storage chamber comprising:

water disposed within predetermined levels at a bottom portion of said storage apparatus;

liquefied gas disposed above said water level to a predetermined liquid level;

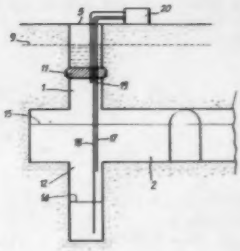
gas in a gaseous phase disposed above said liquid level of said liquefied gas;

at least one tube extending from ground level into said storage for controlling and working said storage from above;

said at least one tube comprising at least one extraction tube for extracting said liquefied gas from said storage;

means for generating an alarm signal in response to a change in said predetermined water levels;

means for filling said at least one extraction tube up to a hydrostatic balance level within said at least one extraction tube;



a trap for draining said water from said storage comprising a sunk draining trap in the form of a well disposed in a lower portion of said storage; and

said at least one extraction tube having a suction opening formed therein and extending down into said trap along a distance such that the volume of said trap above said suction opening is sufficient for filling said at least one extraction tube up to said hydrostatic balance level.

4,417,830

CONNECTOR ASSEMBLY

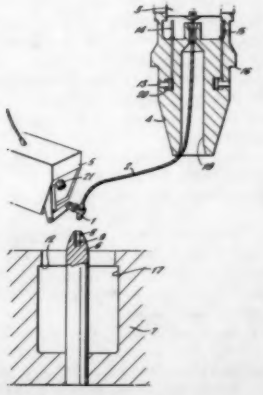
Keith Shotbolt, London, England, assignor to Constructors John Brown Limited, Paddington, England

Filed Feb. 9, 1981, Ser. No. 232,547

Claims priority, application United Kingdom, Feb. 11, 1980, 8004493

Int. Cl.³ E02B *3/16*; E16L *35/00*

U.S. Cl. 405—169 **13 Claims**



1. A connector assembly comprising first and second connecting parts together with means for laterally aligning the connecting parts for connection together, the first connecting part having a guide post and the second connecting part having means for receiving the guide post such that when the

guide post is received the first and second connecting part are laterally and angularly oriented for connection, wherein the first and second connecting parts are adapted to lock together and wherein the lateral alignment means comprises a line provided with a remotely releasable latching means by which the line is releasably attached to the guide post so that the line extends therefrom and may be passed through the receiving means of the second connecting part and the second connecting part may then be slid down the line so that the guide post is thereby brought into the receiving means and the two parts thereby laterally and angularly oriented for connection and after connection the latching means may be released and the line withdrawn through the second connecting part.

4,417,831

MOORING AND SUPPORTING APPARATUS AND METHODS FOR A GUYED MARINE STRUCTURE

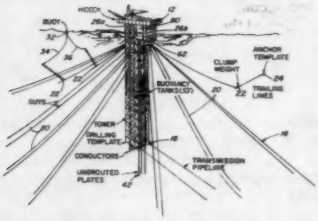
Philip A. Abbott; James E. Dailey; Demir I. Karsan, and Andrea Mangiavacchi, all of Houston, Tex., assignors to Brown & Root, Inc., Houston, Tex.

Filed Apr. 24, 1981, Ser. No. 257,391

Claims priority, application United Kingdom, Apr. 30, 1980, 8014261

Int. Cl.³ E02B *17/00*

U.S. Cl. 405—227 **18 Claims**



1. In a guyed marine structure having

a substantially upright structural member, said member extending from the bottom of a body of water to a position above the surface of said body of water,

a lateral support means connected to said member near said water surface for providing lateral support for said member against forces tending to move the member in a lateral direction, and

a load supporting foundation connected to support at least a portion of the weight of said member,

the improvement wherein said lateral support means comprises

a first plurality of transversely spaced guy line pairs, each pair of lines being connected at a first end to an upper portion of said structural member and at a second end to a respective clump weight resting, under normal sea conditions, on said water bottom, and

a second plurality of transversely spaced guy line pairs, each pair of lines being connected at a first end to a respective clump weight and at a second end to a respective anchor means radially spaced further from said member than said associated clump weight,

whereby under severe sea conditions wherein at least a said clump weight is raised off said sea bottom

said weight is raised without tipping over and

each line of a said pair of guy lines remains transversely spaced from one another.

4,417,832

SILO FOR BULK MATERIAL

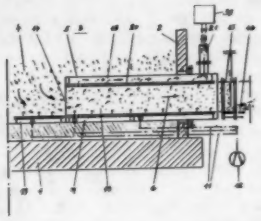
Werner Krauss, Hamburg, Fed. Rep. of Germany, assignor to Claudius Peters AG, Fed. Rep. of Germany

Filed Apr. 14, 1981, Ser. No. 254,209

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1980, 3014206

Int. Cl.³ B65G *53/22*

U.S. Cl. 406—90 **3 Claims**



1. A silo capable of containing particulate material and having unloading means comprising a channel positioned in said silo at a relatively slight downwardly outwardly disposed incline terminating externally of said silo, said channel having an imperforate bottom, first sidewalls, and an imperforate top wall, a pneumatic conveyor chute disposed internally along the bottom of said channel, said pneumatic conveyor chute having a bottom, sidewalls and perforated top, air pressure means adapted and constructed to supply pressurized air to said pneumatic conveyor chute whereby said air is distributed into said channel through said perforated top, a air draining chamber disposed internally along the top of said channel and vertically displaced from said pneumatic conveyor chute, said air draining chamber having a top, sidewalls and a perforated bottom whereby air in said channel is removed, exhaust means adapted and constructed to drain air from said air draining chamber, said channel having at least one particulate receiving entrance located internally of said silo, said pneumatic conveyor chute extending internally within said silo beyond said channel at said entrance or entrances whereby particulate material is introduced into said entrance, said channel extending externally of said silo and having an opening for removal of particulate material.

4,417,833

ROTARY SLOT CUTTING TOOLS

Seev Wertheimer, Nahariya, Israel, assignor to Iscar Ltd., Nahariya, Israel

Filed Nov. 7, 1980, Ser. No. 205,047

Claims priority, application Israel, Oct. 21, 1980, 61323; Dec. 4, 1979, 58862

Int. Cl.³ B26D *1/12*

U.S. Cl. 407—61 **13 Claims**

1. A rotary slot cutting tool arrangement, comprising:

a disc shaped tool,

cutting elements around the periphery of said tool,
chip forming means on said cutting elements for forming the chips after the chips are generated during the cutting of slots on a workpiece,
wherein said cutting elements have top cutting surfaces including said chip forming means,
clearance sides extending from said top cutting surfaces,
straight line cutting edges formed at the junctures of said top cutting surfaces and said clearance sides,
land surfaces between said cutting edges and said chip forming means, and
said chip forming means comprising rib means on said top cutting surfaces extending from said land surfaces longitudinally away from said cutting edges.

4,417,834

MACHINE FOR DRILLING A DOUBLE T PROFILE

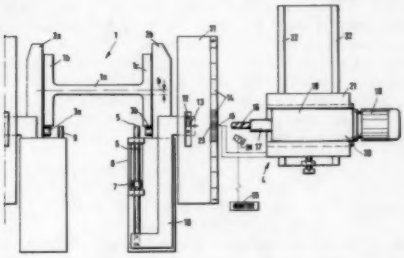
Leopold Jägers, Rudolf-Diesel-Strasse 1, D-5350 Euskirchen, Fed. Rep. of Germany, assignor to Leopold Jägers, Euskirchen, Fed. Rep. of Germany

Filed Jan. 7, 1980, Ser. No. 109,974

Claims priority, application Fed. Rep. of Germany, Jan. 8, 1979, 2900469

Int. Cl.³ B23B *41/00*

U.S. Cl. 408—16 **3 Claims**



3. A drilling machine comprising
means for mounting a profile having a stem along a longitudinal axis;
a tracer mounted for movement perpendicularly of the profile stem for abutting the stem;
a scale connected to said tracer for movement therewith and having a center line parallel with a center line of the profile stem to establish the position of said stem axis;
a drill unit movably transversely of said longitudinal axis and including a drill for drilling a bore in the profile and an indicator positioned on said drill unit to indicate a drilling axis of said drill, said indicator being disposed in register with said center line of said scale to establish the position of said drill relative to said stem axis;
an arm connected to said tracer for moving therewith; and
a scale holder adjustably carried on said arm and having said scale attached thereto.

4,417,835

APPARATUS FOR FORMING SHAPED EDGES

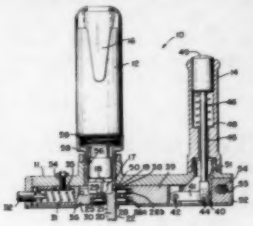
Wesley C. Lund, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Dec. 15, 1980, Ser. No. 216,534

Int. Cl.³ B23C *1/20*

U.S. Cl. 409—180 **5 Claims**

1. A portable router comprising, in combination, a base member defining a horizontally oriented guide surface, a power driven routing tool fixedly mounted on said base member, said routing tool having a material removing blade extending below the plane of said guide surface, first back-up pressure roll means mounted on said base member with freedom for reciprocating sliding motion beneath said guide surface and said material removing blade, a fixed stop mounted on said base member and positioned to be engageable with said back-up pressure roll means, first biasing means for normally biasing said back-up pressure roll means into engagement with said fixed stop, second pressure roll means mounted on said base member with freedom for reciprocating sliding motion beneath said base member, second biasing means for normally biasing said second pressure roll means in a direction away from said first back-up roll means so as to form a sheet workpiece receiving notch in said router beneath said guide surface, and operator controlled actuating means for overcoming said second biasing means for shifting said second pressure roll means towards said first back-up pressure roll means to clamp a sheet-like workpiece between said first and second pressure roll



means with an edge of the sheet-like workpiece engaged with said guide surface, and for thereafter relatively shifting said first and second pressure roll means and the sheet-like workpiece clamped therebetween laterally through a fixed predetermined distance so as to relatively move the face of the workpiece engaged with said first back-up pressure roll means and the sheet edge engaged with said guide surface into material removing engagement with said material removing blade whereby relative movement of said router along and with respect to the edge of the workpiece engaged with said guide surface serves to remove material from the face and edge of the work piece in material removing engagement with said blade while maintaining a constant root face thickness at the thus formed shaped edge of the workpiece irrespective of variations in thickness of the workpiece.

4,417,836

DEVICE FOR SEPARATING A STACK BY LAYERS, PARTICULARLY A STACK OF LONG TIMBERS OR LUMBER

Heinz Schiepe, Berlin, Fed. Rep. of Germany, assignor to Heinz Schiepe Grosshandel und Generalvertretung für Holzbearbeitungsmaschinen, Fed. Rep. of Germany

Filed Apr. 21, 1981, Ser. No. 256,010

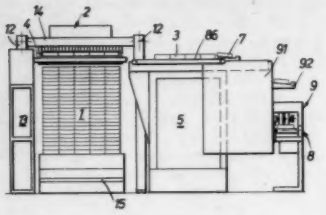
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1980, 3015648

Int. Cl.³ B65G *59/02, 60/00*

U.S. Cl. 414—32 **26 Claims**

1. A device for separating at least one elongated member at a time from a stack of such members comprising:
shifting means positionable at one end of the stack for shifting at least one member of the stack so as to move a part of the member out over an opposite end of the stack;
a propping element initially positionable at the opposite end of the stack, movable up under the part of the member over the opposite end of the stack to lift the at least one member, and across a top of the remainder of the stack to separate the shifted member from the remainder of the stack;
drive means connected to said propping element for moving the propping element up under the member and across the top of the stack; and
a plurality of transfer arms sequentially movable into a space between the lifted and separated at least one member and the

remainder of the stack, as the propping element moves across the top of the remainder of the stack, for receiving the at least one member and moving it away from the remainder



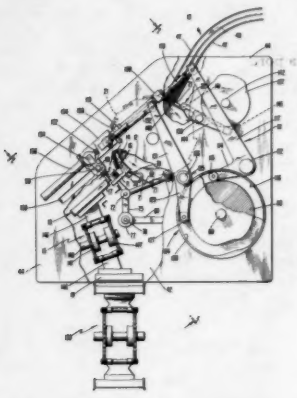
of the stack, and means connected to said transfer arms, positionable at a side of the stack for sequentially moving the transfer arms.

4,417,837

APPARATUS FOR GROUPING ARTICLES

Albert A. Pinto, White Plains, N.Y., and George Ryder, West Orange, N.J., assignors to Nabisco, Inc., Parsippany, N.J.

Filed Jun. 29, 1981, Ser. No. 278,874
Int. Cl.³ B65G *57/00*
U.S. Cl. 414—104 **8 Claims**



1. Article stacking apparatus comprising an infeed chute, a pair of inclined rails, a wheel for removing flat articles from the infeed chute and placing them on edge on said rails, said wheel being mounted about a generally horizontal axis and being formed with a plurality of serrated teeth on the outer edge thereof, each tooth having a generally radially oriented article engaging surface, and a generally tangentially oriented article receiving surface, said infeed chute extending downwardly to said wheel for delivering a column of flat articles into the path of said teeth, means for rotating said wheel so that each article engaging tooth surface in turn engages and removes the bottom article in the chute, vacuum means for holding the articles on the article receiving tooth surfaces as they are carried from said chute to said rails, wedge means mounted adjacent said rails for moving the articles away from the teeth, and a gate lever at the bottom end of said infeed chute, said lever being forked at one end thereof to provide two prongs separated by a slot, said prongs extending on each side of said teeth beneath the column of articles in said infeed chute, said teeth being received by said slot in said forked end of said lever, and cam means for operating said lever to lift said prongs engaging the bottom article in said infeed chute and lifting the infeed column out of the path of said teeth.

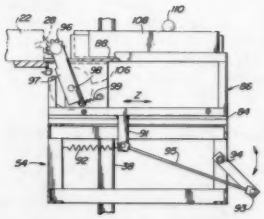
6. Article stacking apparatus comprising an infeed chute, a pair of inclined rails, a wheel for removing flat articles from the infeed chute and placing them on edge on said rails, said wheel being mounted about a generally horizontal axis and being formed with a plurality of serrated teeth on the outer edge thereof, each tooth having a generally radially oriented article engaging surface and a generally tangentially oriented article receiving surface, said infeed chute extending downwardly to said wheel for delivering a column of flat articles into the path of said teeth, means for rotating said wheel so that each article engaging tooth surface in turn engages and removes the bottom article in the chute, vacuum means for holding the articles on the article receiving tooth surfaces as they are carried from said chute to said rails, wedge means mounted adjacent said rails for moving the articles away from the teeth, a conveyor having buckets movable into alignment with said rails for receiving and carrying away the stacks of articles deposited on the rails, first finger means extending upwardly between said rails for maintaining the articles deposited on said rails in an upright position, means for moving said first finger means first along said rails away from said wheel and then downwardly out of engagement with said articles, second finger means positioned above the conveyor bucket aligned with the rails and extending downwardly to maintain the articles upright after said first finger is moved out of engagement therewith, means for imparting a reciprocating motion to said second finger means along the length of the conveyor bucket, and means for rotating said second finger means into and out of an article engaging position so that the articles are guided into the conveyor bucket and the second finger means passes over the articles during its return to the starting position adjacent the rails.

4,417,838

APPARATUS FOR LOADING ARTICLES INTO LANES ON HORIZONTAL SHELVES

Charles W. Schultz, Easton, Pa., and James L. Thatcher, Alpha, N.J., assignors to SI Handling Systems, Inc., Easton, Pa.

Filed Dec. 23, 1980, Ser. No. 219,542
Int. Cl.³ B65G *1/04*
U.S. Cl. 414—277 **10 Claims**



1. Apparatus for loading articles into lanes on horizontal shelves comprising a loading frame mounted on wheels to permit the frame to move horizontally in a first direction, a main carriage supported by said frame for vertical movement, an auxiliary carriage supported by said main carriage for horizontal movement relative thereto in a second direction between operative and inoperative positions, said second direction being perpendicular to said first direction, a horizontal plate member supported by said auxiliary carriage and adapted to bridge a gap between said auxiliary carriage and a shelf in the operative position of the auxiliary carriage, a lane actuator supported by said auxiliary carriage and being adapted to drive an endless member connected to a pusher in a shelf lane to a reloading position, motor means on said auxiliary carriage for driving said lane actuator, whereby articles may be reloaded

onto a shelf lane from said plate member when said auxiliary carriage is in its operative position.

4,417,839

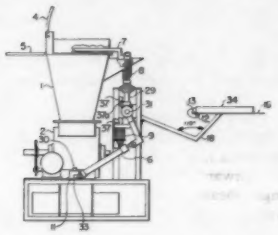
AUTOMATIC HATCHERY TRAY DUMPER

William F. Whitehead, Jr., Farmington; James A. Dickens, Watkinsville, and Benjamin C. Haynes, Jr., Athens, all of Ga., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Continuation-in-part of Ser. No. 85,440, Oct. 16, 1979, abandoned. This application Mar. 27, 1981, Ser. No. 248,371

Int. Cl.³ B65G *65/23*

U.S. Cl. 414—303 **10 Claims**



1. A hatchery tray dumper comprising:

(a) a hopper having an open top;

(b) a tray dumping means adjacent said hopper, said dumping means including: a tray support means to receive a tray in a horizontal, upright position, means for lifting said tray up and through an arc, tilting said tray past vertical, and inverting said tray onto the open top of the hopper, thereby dumping the contents of the tray into the hopper, said lifting means further including a means of initially assisting said lifting means and said support means further including means for holding said tray support means in a vertical position for a delayed time interval as well as tapered uprights affixed thereto to act as guides for the tray so that the tray will be centered over the hopper when dumped, and a means to retract the support means after the horizontal tray is dumped;

(c) speed control means connected to the dumping means to slow down the speed of the support means near the end of its lift cycle so as to prevent trays from hitting the hopper with excessive force;

(d) a tray pushing means connected to said hopper and said dumping means to push the trays off the hopper in response to retraction movement of the support means;

(e) a striker plate affixed to the top of the hopper to control the travel of said tray when the tray is inverted onto the top of the hopper; and,

(f) a spring assembly rigidly mounted to the pushing means, said spring assembly comprising a torsion spring inserted over the shaft of the pushing means, and a lugged collar communicating with a notched collar to retain the torsion spring on the pushing means.

4,417,840

PARTICULATE MATERIAL TRANSFER SYSTEM

Weldon K. Johnson, Boise, Id., assignor to Kerr-McGee Coal Corporation, Oklahoma City, Okla.

Division of Ser. No. 81,888, Oct. 4, 1979, Pat. No. 4,290,725. This application Apr. 2, 1981, Ser. No. 250,509

The portion of the term of this patent subsequent to Sep. 22, 1999, has been disclaimed.

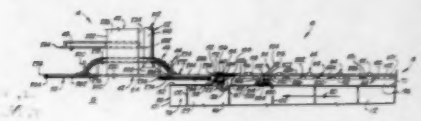
Int. Cl.³ B65G *67/06, 67/20, 67/22*

U.S. Cl. 414—329 **7 Claims**

1. An improved overhead storage apparatus for protecting particulate material from the surrounding outside environment during the transfer of the material from the overhead storage assembly adapted for use with a vehicle having a storage bin formed therein, at least one hatch door with each hatch door being connected to the vehicle and positioned so that the hatch doors cover the storage bin formed in the vehicle in a closed first position of the hatch doors, the hatch doors each being movable from the storage bin in the vehicle to an opened second position, the overhead storage assembly comprising:

a loading chute having a lower end and a channel extending therethrough, the channel being in communication with the storage assembly for transferring the particulate material from the storage assembly through the channel in the loading chute;

a temporary cover having an upper surface, a lower surface, a first end, an opposed second end, a first side and an opposed second side, the temporary cover being connected to the lower end of the loading chute with the channel of the loading chute extending through the temporary cover, at least a portion of the temporary cover



being positionable between the storage bin of the vehicle and the hatch door prior to the hatch door being moved from the closed first position to the opened second position, the temporary cover being positioned over and covering a portion of the storage bin of the vehicle covered by the hatch door in the closed first position of the hatch door thereby covering the storage bin of the vehicle prior to the hatch door being moved to the opened second position, the particulate material being transferrable from the overhead storage bin to the storage bin of the vehicle via the channel in the chute while the temporary cover covers the storage bin of the vehicle; and

means operatively associated with the temporary cover for moving the hatch door from the closed first position to the opened second position after the temporary cover has been positioned over and covering a portion of the storage bin of the vehicle covered by the hatch door in the closed first position of the hatch door.

4,417,841

LOADER AND TRANSPORTER

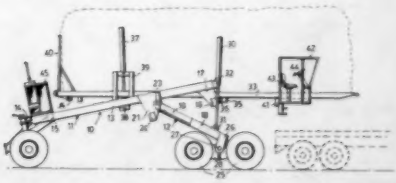
James B. Chadwick, Geebung, Australia, assignor to Hydraulics & Fabrications Pty. Ltd., Queensland, Australia

Filed Jul. 14, 1981, Ser. No. 283,339

Claims priority, application Australia, Jul. 30, 1980, PE4769

Int. Cl.³ B60P *1/18, 1/30, 1/36*

U.S. Cl. 414—346 **11 Claims**



1. A loader and transporter comprising a wheel mounted main frame, a deck, a reversible longitudinal conveyor on the deck, a pivotal connection transversely of and connecting the deck and main frame, lifting means for raising and lowering the

pivotal connection and deck relative to the main frame, tilting means for tilting the deck on the axis of the pivotal connection relative to the main frame when the deck is either lowered to bring it from a substantially horizontal low traveling position to a tilted loading position, or raised to bring it from a substantially horizontal high traveling position to a tilted unloading position, and the wheel mounted main frame including a rear chassis portion supported at its rear end on steerable wheels, and a pair of forward suspension arms pivoted at their rear ends about a transverse axis to said rear chassis portion and pivoted about transverse axes at their forward ends to a pair of laterally spaced drive wheel assemblies, said pivotal connection of the deck to the wheel mounted main frame being disposed substantially at the front of the rear chassis portion.

4,417,842

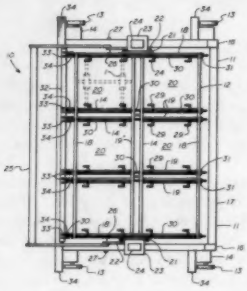
SOIL EROSION PREVENTION BLOCK INSERT AND APPARATUS FOR POSITIONING

Kossuth J. Landry, Jr., P.O. Box 599, Channelview, Tex. 77530

Filed Nov. 4, 1980, Ser. No. 204,055

Int. Cl.³ E02B *3/12*

U.S. Cl. 414—572 **5 Claims**



1. An apparatus for aligning and loading inserts for soil erosion prevention blocks, comprising:

a rollably movable main frame;

an insert holder frame movably coupled to said main frame, said insert holder frame adapted for movement between a first position, wherein said inserts are supported by said frame, and a second position, wherein said inserts are positioned for casting into soil erosion prevention blocks;

at least one aligning frame formed within said insert holder frame for receiving at least one of said inserts;

at least one hook movably coupled with said insert holder frame for engaging and retaining said at least one insert in said aligning frame; and

means for moving said hook from a first engaged position wherein said hook engages said insert for movement with said insert holder frame to a second released position wherein said hook disengages said insert and said insert holder frame is movable independently of said insert.

4,417,843

WAYSLESS MACHINE TOOL TABLE

Benno I. Bonga, Crans, Switzerland, assignor to Ateliers des Charmilles, S.A., Geneva, Switzerland

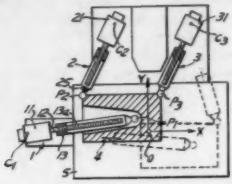
Filed Jan. 9, 1981, Ser. No. 223,812

Claims priority, application Switzerland, Jan. 25, 1980, 596/80

Int. Cl.³ B23Q *7/00*

U.S. Cl. 414—676 **9 Claims**

1. A machine tool comprising a stationary table, a movable table supported by and displaceable relative to said stationary table, a workpiece mounted on said movable table, bearing means between said tables permitting displacement of said movable table relative to said stationary table in perpendicular directions within a single plane substantially parallel to said stationary table, at least three variable length linear actuators for displacing said movable table in said plane, said linear actuators having their axes in a single plane substantially parallel to said stationary table, pivot means connecting an end of each of said linear actuators to said stationary table and an other end to said movable table, and means for controlling the length of each of said linear actuators for causing said movable table to occupy a predetermined position relative to said stationary table.



4,417,844

AUTOMATIC TOOL MOUNTING FOR EXCAVATORS, LOADERS, GRADERS AND THE LIKE

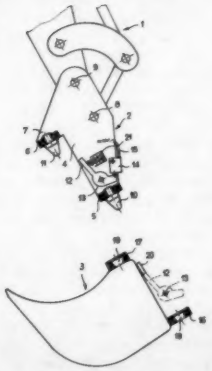
Pierre J. de Pingon, 7 avenue du Parmelan, 74000 Annecy, France

Filed Jan. 30, 1981, Ser. No. 229,927

Claims priority, application France, Jan. 31, 1980, 80 02095

Int. Cl.³ E02F *3/81*

U.S. Cl. 414—723 **1 Claim**



1. For use with an excavator, charger, grader or the like, the combination of a tool holder and a tool, at least two sets of at least two lugs each, fixedly secured on one of the tool holder and tool, means providing matching recesses for the lugs on the other of the tool holder and tool, a locking member on one of the tool holder and tool, an abutment on the other of the tool holder and tool behind which the locking member locks when the lugs are fully seated in the recesses thereby to maintain the lugs fully seated in the recesses, and means for selectively disengaging the locking member from behind the abutment, all the lugs and the axes of all the recesses being parallel to each other so that all the lugs are simultaneously engageable in the recesses by relative movement of the tool holder and tool in a single direction, the tool holder comprising two spaced parallel plates interconnected by spaced transverse members, said lugs or recesses being disposed in spaced relationship along said transverse members between the planes of said plates, said transverse members being flat bars that are spaced apart in a

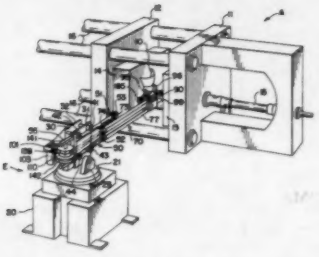
direction perpendicular to the bars and are also laterally offset in a direction parallel to the plane of the bars but perpendicular to the length of the bars.

4,417,845

PROGRAMMABLE POSITIONING AND OPERATING MECHANISM FOR INDUSTRIAL OPERATING HEAD

Charles A. Burton, Columbus, Ohio, assignor to Rimrock Corporation, Columbus, Ohio

Filed May 29, 1981, Ser. No. 268,393
Int. Cl.³ B25J 5/00
U.S. Cl. 414—733 18 Claims



1. In apparatus for moving through coordinated functions, an operating head mounted on and extendable linearly relative to a base, the improvement comprising:

a main carriage mounted on said base for pivotal movement about a tilt axis,

an intermediate carriage mounted on said main carriage for travel relative thereto between an extended position and a retracted position,

a head carriage mounted on said intermediate carriage for travel relative thereto between an extended position and a retracted position in telescoping fashion relative to said main carriage, said operating head being connected to said head carriage for pivotal movement about a wrist tip axis parallel to said tilt axis,

drive means operatively connected between said main carriage and said intermediate carriage for moving said intermediate carriage between said extended and retracted positions,

first control wheel means mounted for rotation at the forward end of said intermediate carriage,

second control wheel means mounted for rotation at the rearward end of said intermediate carriage,

a first length of flexible connecting means connected at one end to said main carriage and extending forwardly to and in operative engagement with said first control wheel means, and thence rearwardly to a connection to said head carriage,

a second length of flexible connecting means connected at one end to said main carriage and extending rearwardly to and in operative engagement with said second control wheel means and thence forwardly to a connection to said head carriage whereby when said drive means extends and retracts said intermediate carriage relative to said main carriage, said lengths cause simultaneous extension and retraction respectively of said head carriage relative to said intermediate carriage,

a pivotal tip control means operatively connected to said operating head and mounted on said head carriage for pivotal movement about said wrist tip axis,

a pivotal wrist tip drive means mounted on said main carriage and having an axis parallel to said wrist tip axis,

idler wheel means mounted at the rearward end of said intermediate carriage for free rotation about an axis angularly disposed relative to said wrist tip axis in a plane parallel to said wrist tip axis, and

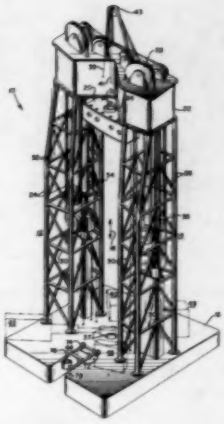
an endless, flexible, inextensible connecting means operatively connecting said tip control means, said idler wheel means and said tip drive means whereby said wrist tip drive means remains operatively connected to said tip control means during telescoping extension and retraction movement of said head carriage and intermediate carriage relative to said main carriage.

4,417,846

TRAVELING BLOCK ELEVATOR LATCH ASSEMBLY

Thomas L. Elliston, Forth Worth, Tex., assignor to Hydra-Rig, Inc., Ft. Worth, Tex.

Filed Dec. 9, 1977, Ser. No. 858,948
Int. Cl.³ E21B 19/00
U.S. Cl. 414—745 19 Claims



1. Apparatus for supporting a length of pipe to accommodate pipe stabbing and removal operations during launching or recovery of a length of pipe through an opening in a support platform, the length of pipe being of the type characterized by a tubular body portion terminated by an internally threaded upset connecting box having a shoulder which projects radially with respect to the tubular body portion comprising, in combination:

an elevator block having an axial bore for receiving the tubular body portion and having first and second seating surfaces for engaging the shoulder of the upset connecting box and the surface of the support platform which surrounds the opening, respectively, the first and second seating surfaces being simultaneously engageable by the shoulder of the upset connecting box and support platform, respectively, to permit the length of pipe to be supported in a vertical position with respect to the platform, the elevator block further including a radially projecting latching hub intermediate said first and second seating surfaces for engaging latching means;

a traveling block having a first bore for receiving the elevator block and a second bore of larger diameter concentric with the first bore and having a side wall defining a latching chamber; and,

latching means carried by the traveling block including a plurality of lifting dogs disposed in the latching chamber, each lifting dog being moveable between first and second extreme positions, the lifting dogs engaging the side wall of the second bore and projecting radially into the first bore of the traveling block in response to movement of the lifting dogs to the first extreme position to permit latching engagement with the latching hub as the traveling block is lifted, and the lifting dogs being retractable within the latching chamber in response to movement of the lifting

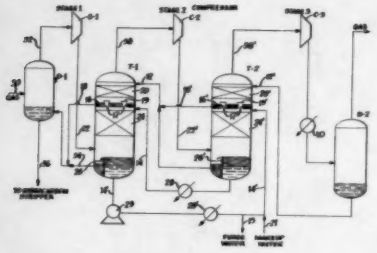
dogs to the second extreme position to permit the traveling block and latching means to be displaced axially with respect to the length of pipe without engaging the latching hub.

4,417,847

SEPARATE QUENCH AND EVAPORATIVE COOLING OF COMPRESSOR DISCHARGE STREAM

Gebhard K. Kube, Roesrath, Fed. Rep. of Germany, assignor to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Aug. 14, 1981, Ser. No. 292,892
Int. Cl.³ F04D *29/58*
U.S. Cl. 415—1 7 Claims



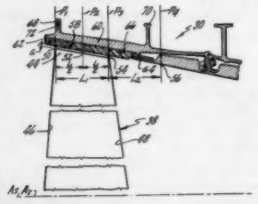
1. A process for multistage compression with interstage cooling of a mixture of gases having different boiling points which comprises, in each interstage cooling step, cooling the compressed gas by direct contact in sequence with a non-evaporative cooling liquid and then with a separate evaporative cooling liquid.

4,417,848

CONTAINMENT SHELL FOR A FAN SECTION OF A GAS TURBINE ENGINE

Kurt M. Dembeck, Vernon, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Feb. 1, 1982, Ser. No. 344,901
Int. Cl.³ F01D *25/24, 5/20*
U.S. Cl. 415—121 G 8 Claims



1. In an axial flow gas turbine engine of the type having a fan case which includes a shell extending circumferentially about an array of fan rotor blades, and having an axis of symmetry As the improvement which comprises:

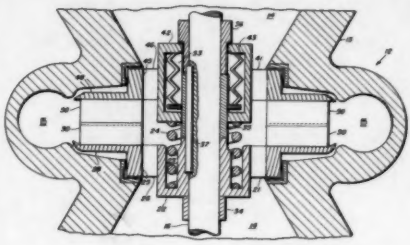
a shell having a thickness of material in the radial direction which increases in the axially rearward direction and which has a maximum thickness rearward of a plane P_2 perpendicular to the axis of symmetry As and passing through the mid-chord point of one of the rotor blades wherein the increasing thickness of the shell selectively increases the cross-sectional area of the case to reinforce the case against the impact of blade fragments.

4,417,849

VARIABLE GEOMETRY CENTRIFUGAL PUMP

Joseph H. Morris, Queenstown, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 15, 1981, Ser. No. 302,343
Int. Cl.³ F01D *7/00*
U.S. Cl. 415—131 8 Claims



1. A variable geometry centrifugal pump comprising:

a housing having an inlet, an outlet, and a pump chamber formed therebetween;

a rotational shaft positioned within the pump chamber of the housing;

first and second spaced impellers having intermeshing vane portions disposed within the pump chamber and positioned around the shaft for rotational movements therewith, the first impeller is rotationally keyed to the shaft at a fixed axial position, and one of the impellers has central deflector ports for conveying fluid from the housing inlet to the region defined between the impellers; and

flexible torque transmitting means interconnecting the first and second impellers for producing rotation of the second impeller in response to rotation of the first impeller and the shaft, and the torque transmitting means being capable of axial contraction and elongation in response to differential fluid pressure occurring on opposite surfaces of the impellers;

said flexible torque transmitting means comprising radially spaced concentric metal bellows elements having a plurality of pleated convolutions, said bellows elements are arranged so that the convolutions of each bellows are axially in phase, and a layer of elastomeric material disposed between the spaced bellows elements for reducing torsionally induced stresses within the bellows.

4,417,850

VERTICAL COLUMN PUMP

Richard K. Hacker, West Allis, and James F. Tesch, New Berlin, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

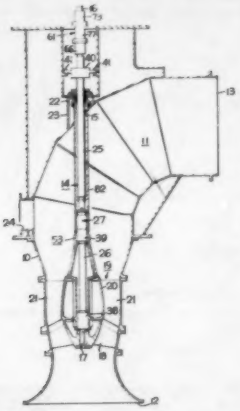
Filed Dec. 20, 1982, Ser. No. 451,555
Int. Cl.³ F04D *13/00*
U.S. Cl. 415—142 6 Claims

1. A hydraulic pump installation having a water passageway defined by a pump casing; an impeller within said water passageway; a rotary shaft including separable first and second shaft portions carrying said impeller and operably connecting said impeller to a pump motor with at least a portion of said shaft being disposed within said passageway; a first cylindrical bearing surrounding said shaft adjacent said impeller;

a diffuser surrounding said shaft adjacent said impeller and spaced from said shaft; said diffuser having a plurality of diffuser vanes extending therefrom and secured to said casing; a first bearing cartridge comprising a plurality of separable members adapted to be joined with opposing surfaces of said members defining a shaft receiving orifice extending through said first cartridge; said first cartridge

sized to be received within said diffuser with said shaft extending through said orifice; means for removably securing said cartridge to said diffuser on a side of said diffuser remote from said impeller with said cartridge extending toward said impeller and terminating at a free end; means for removably securing said first bearing to said free end;

coupling means for accommodating separation of said first and second shaft portions with said first portion extending from said motor and said second portion extending from said impeller; means for moving said first portion away



from said second portion an amount sufficient to provide a gap between said first and second portions with said gap between said portions being of a distance greater than an axial dimension of said first bearing whereby first bearing may be removed from said support and moved along said second portion to said gap and removed through said gap whereby said cartridge may be removed from said diffuser and moved along said shaft and away from said impeller with said cartridge carrying said first bearing and said plurality of members may be separated exposing said first bearing accommodating removal of said first bearing.

4,417,851

MODULATED DIFFUSER PUMP

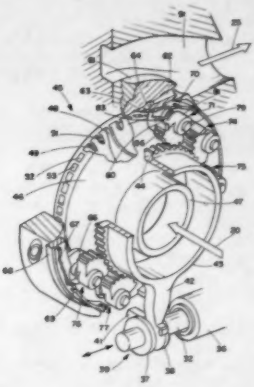
John E. Cygnor; Terry L. Whitesel, both of Rockford, and Duane C. Mosure, Poplar Grove, all of Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Nov. 17, 1980, Ser. No. 207,302
Int. Cl.³ F04D *29/46*
U.S. Cl. 415—150 **11 Claims**

1. A centrifugal pump capable of handling a fluid containing solid contaminant particles, said pump of the type including an impeller to propel said fluid through a radial outlet to a diffuser which includes a plurality of diffuser passages, the improvement comprising:

rotatably mounted valve elements passing in part through said diffuser and across said diffuser passages, each valve element having a port therethrough to variably selectively allow fluid passage therethrough upon rotation of said valve element,

means drivingly coupled to each of said valve elements to thereby affect a yieldable rotation of said valve elements in one direction to progressively reduce the opening of said valve element port to said diffuser passage, said means drivingly coupled to said valve elements providing a direct mechanical coupling to said valve element to thereby affect a nonyieldable rotation of said valve element in an opposite direction to increase said opening of said valve port to said diffuser passage to thereby ensure that contaminant particles that lodge between a portion of said valve element port and said diffuser passage and interrupt movement of one or more valve element port closings do not prevent the remaining valve port elements from closing, while during the opposite



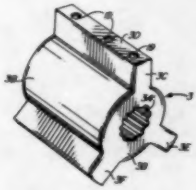
rotation of said valve elements there is a direct mechanical drive that ensures said opening of said valve port to thereby release said contaminant particle and allow passage of said particle from said valve port element and said diffuser.

4,417,852

MARINE PROPELLER WITH REPLACEABLE BLADE SECTIONS

John J. Costabile, 7037 E. Moreland, Scottsdale, Ariz. 85257; Arvid B. Costabile, 2716 E. Forrest Cir., Tempe, Ariz. 85281, and Ernest Costabile, 2107 E. Carson Dr., Tempe, Ariz. 85282

Filed Aug. 28, 1981, Ser. No. 297,343
Int. Cl.³ F03B *3/12*
U.S. Cl. 416—2 **4 Claims**



1. A marine propeller comprising in combination:

a hub comprising a cylindrical central portion having a hole therein for receiving a motor-driven shaft and a plurality of uniformly spaced spoke members integral with and extending substantially radially outwardly from said central portion, each of said spoke members having an outer surface and a plurality of spaced threaded holes therein;

a plurality of substantially identical single blade units each including a blade support base and a propeller blade attached to that blade support base, each of said blade support bases including a substantially semi-cylindrical member having an inner lip located along one edge thereof with an inner surface abutting a respective one of said outer surfaces of one of said spoke members, said semi-cylindrical member also having an outer lip located along an opposite edge of that semi-cylindrical member for overlapping and abutting an outer surface of the inner lip of an adjacent one of said semi-cylindrical members, each

of said inner lips and the outer lip overlapping that inner lip having therethrough a plurality of clearance holes aligned with the respective ones of said threaded holes in the outer surface of the spoke member abutting the inner surface of that inner lip; and

a plurality of screws extending through respective ones of said aligned clearance holes and engaging the threads of corresponding ones of said threaded holes to tightly attach said edges of each of said blade support bases to said outer surfaces of two adjacent ones of said spoke members, respectively, said spoke members being sufficiently thick and rigid to allow said screws and said threads of said threaded holes to be large enough and strong enough to avoid being damaged when any of said propeller blades strikes a large, hard obstacle at such high speeds that that propeller blade is at least partially sheared off,

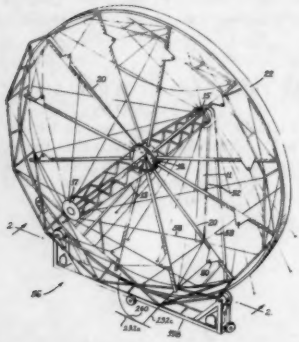
whereby individual ones of said single blade units that are severely damaged as a result of encountering large, hard objects at high speeds can be repeatedly replaced because no resulting damage to said hub occurs.

4,417,853

WIND TURBINE SOFT AIRFOIL CONTROL SYSTEM AND METHOD

Gregory E. Cook, Warrenville, Ill., assignor to Windpowered Machines Ltd., Livingston, Mont.

Filed Feb. 17, 1981, Ser. No. 234,963
Int. Cl.³ F03D *11/04*
U.S. Cl. 416—132 B **28 Claims**



1. Soft airfoil support and control assembly for a wind turbine having a wheel with an axle suspended from a rim, said axle having a hub assembly in the plane of said wheel, comprising:

(a) an elongate support member mounted in tension extending between said hub and rim;

(b) an elongate spindle mounted radially between said hub and rim in a manner minimizing longitudinal force loading thereof;

(c) said spindle carrying a soft airfoil furled thereabout;

(d) means for mounting said spindle for rotation about its elongate axis to permit furling and unfurling of said soft airfoil therefrom;

(e) means for supporting a portion of said airfoil spaced from said spindle, said support means including at least one elongate boom member disposed intermediate said rim and said hub;

(f) means for selectively changing the angular position of the boom member with respect to the plane of the wheel to control the angle of attack of said unfurled airfoil relative to wind conditions;

(g) means for mounting said boom member and said spindle to pivot in unison about a common center line spaced from the rotational axis of said spindle;

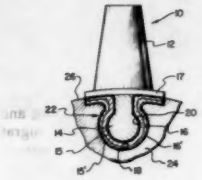
(h) said assembly cooperating to provide selective positioning of a selected amount of unfurled soft airfoil before the wind to effect rotation of said wind turbine wheel for power take-off from the rim thereof.

4,417,854

COMPLIANT INTERFACE FOR CERAMIC TURBINE BLADES

Edwin F. C. Cain, Canoga Park, and William T. McFarlen, Thousand Oaks, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 132,575, Mar. 21, 1980, abandoned. This application Apr. 19, 1982, Ser. No. 369,723
Int. Cl.³ F01D *5/28*
U.S. Cl. 416—241 B **16 Claims**



1. A ceramic turbine blade suitable for attachment to a turbine disk having a peripheral surface and a series of footings in said peripheral surface, each of said footings having interior surfaces for receiving a turbine blade, said ceramic blade comprising:

a ceramic body comprising a blade body and a root flange,

a first layer of conductive metal deposited onto said root flange by chemical deposition,

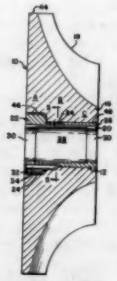
at least one layer of compliant metal electroformed onto said first layer, said compliant layer having an exterior surface engageably conforming to said interior surfaces of one of said footings.

4,417,855

MOUNTING ASSEMBLY FOR HIGH SPEED TURBO DISCS

Robert E. Jepsen, Emmaus, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 8, 1981, Ser. No. 271,156
Int. Cl.³ F01D *5/06*
U.S. Cl. 416—244 A **7 Claims**



1. A high speed turbo disc mounting assembly comprising:

(a) a shaft for transmitting rotational force to and from said disc assembly;

(b) a bushing mounted on said shaft by an interference fit between at least a portion of the bore surface of said bushing and the circumferential surface of said shaft, said bushing including a relatively large diameter annular

flange projecting radially outward at one end of said bushing through which a plurality of axially aligned torque pin apertures are formed within said flange but which form only partial cylindrical channels in the surface of the bushing adjacent said flange;

(c) a turbo disc mounted on said bushing consisting of a relatively large diameter portion and a relatively small diameter portion and having a stepped axial bore, which consists of a large diameter bore adjacent the disc's large diameter portion and a small diameter bore adjacent the disc's small diameter portion, said disc having a plurality of partial cylindrical torque pin channels in the portion of said small diameter bore immediately adjacent said large diameter bore such that said channels correspond to the channels in said bushing, and form an extension of said torque pin apertures, said disc having an interference fit with said bushing only in the area of said small diameter bore of said disc not juxtaposed to said channels;

(d) a plurality of torque pins located axially in the apertures and corresponding channels of said bushing and engaging the channels in the bore of said turbo disc for the transmission of torque between said bushing and said turbo disc without restraint of the outward migration of said disc during high speed operation, wherein said pins are fully encased in the flange of said bushing adjacent a high dynamic stress area of said turbo disc and are only partially engaged circumferentially in said turbo disc bore at its area of lower dynamic stress such that radially outward migration of the disc is not prevented by the torque pins.

4,417,856

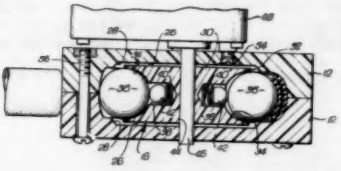
PERISTALTIC PUMP

Kevin G. Minissian, P.O. Box 85C, Pasadena, Calif. 91104

Filed Aug. 25, 1981, Ser. No. 296,014

Int. Cl.³ F04B *43/08*

U.S. Cl. 417—477 **5 Claims**



1. A peristaltic pump comprising:

a housing having a substantially semi-annular seat for supporting a flexible tubing;

a flexible deformable resilient tubing disposed within the annular seat and defining a curvilinear tubing axis, the tubing having an outer surface and defining an outer radius, the seat having a radius of curvature slightly larger than the outer radius of the tubing to substantially engage the outer surface of the tubing when deformed;

a rotor having opposing ends, the rotor disposed and rotatable within the housing, a semispherical concave surface at either end of the rotor, and a roller ball disposed within each concave surface, the roller ball having a convex surface about a curvilinear axis parallel to the curvilinear axis of the tubing to cause significant central tubing deformation while limiting the deformation forces exerted at the tube edges, the rotor rotatable within the housing to cause the roller ball when the rotor is rotated to impinge normal to the tubing axis to deform the central region of the tubing, moving fluid through the tubing with the movement of the rotor and creating a vacuum rearward;

means for biasing the roller ball against the tubing to compensate for small variations in tubing outer diameter; and

ball bearing means for reducing rotational friction of the roller ball, the ball bearing means disposed intermediate the biasing means and the roller ball and bearing on the roller ball, the ball bearing means having a smaller diameter than the roller ball.

4,417,857

PISTON PUMP

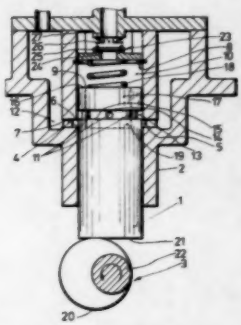
Rainer Südbeck, Duisburg, Fed. Rep. of Germany, assignor to Pierburg GmbH & Co. KG, Neuss, Fed. Rep. of Germany

Filed Jan. 12, 1982, Ser. No. 338,992

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1981, 3102506

Int. Cl.³ F04B *7/04*

U.S. Cl. 417—490 **7 Claims**



1. In a piston pump having a controlled delivery rate, said pump comprising a pump cylinder including a side wall, means defining at least one fluid inlet opening in said side wall, means defining an inlet chamber communicating with said at least one inlet opening upstream thereof, a piston in said cylinder, said piston including a side face, a driving mechanism operative to reciprocate said piston in said cylinder, said cylinder and said piston defining a working chamber between said piston and one end of said cylinder, a fluid outlet valve and means defining a pressure space on the outlet side of said valve, the improvement comprising means defining at least one piston opening in said side face of said piston and means defining at least one passage communicating said at least one piston opening with said working chamber, said at least one piston opening being so located that said at least one piston opening is moved into communication with said at least one inlet opening at two separate times during each cycle of reciprocating movement of said piston in said cylinder to allow fluid being pumped to be sucked from said at least one inlet opening into said working chamber only during said two separate times.

4,417,858

PLUNGER LIFT CONTROL

Gregg W. Stout, Montgomery, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Jun. 29, 1981, Ser. No. 278,705

Int. Cl.³ F04B *47/12*

U.S. Cl. 417—58 **5 Claims**

1. Control apparatus for use in a gas lift system for a producing well wherein liquid is lifted in the production tubing by a pneumatically driven magnetic plunger, said apparatus comprising

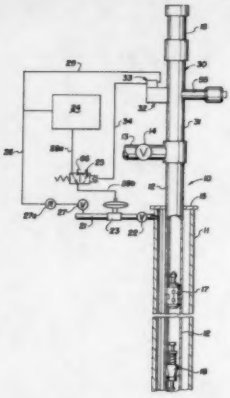
a pneumatically operated motor valve in a flow line connected with said producing well;

a timing mechanism including a flow control valve connected between a supply line and a signal line connected to said motor valve for pressurizing and venting said motor valve for closing and opening said motor valve;

auxiliary control means for said motor valve including a magnetic actuator and associated pilot valve, said mag-

netic actuator comprising a segment of the production tubing fabricated from a non-magnetic material, a magnet supported on said tubing segment for movement between alternative first and second positions, a closure member for said pilot valve movable between alternate positions, and means for coupling said closure member and said magnet, said magnet being moved in response to detection of said pneumatically driven plunger to effect closing of said motor valve by operation of said pilot valve; and

an auxiliary control valve in said signal line between said timing mechanism and said motor valve and connected with said pilot valve for pressurizing said motor valve to



open said motor valve and for venting said motor valve to close said motor valve, said auxiliary control valve being biased toward a first operating position opening said signal line to open said motor valve, and said auxiliary control valve being moved to a second position by a pressure signal from said pilot valve upon detection of said plunger by said magnet closing said signal line to said motor valve and venting said motor valve to close said motor valve, and said auxiliary control valve being held at said second position by pressure in said signal line from said flow control valve in said timing mechanism for maintaining said motor valve closed until termination of said pressure signal from said flow control valve.

4,417,859

ROTARY DISPLACEMENT TURBINE ENGINE WITH VACUUM RELIEF VALVE MEANS

Frank C. Pranger, Rte. 2, Box 527, Fairhope, Ala. 36532

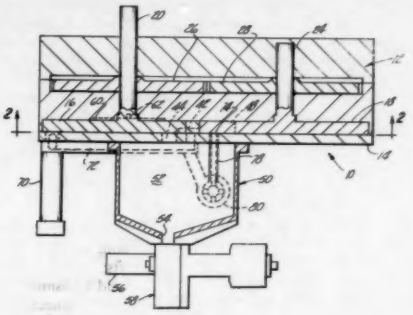
Filed Oct. 4, 1979, Ser. No. 81,820

Int. Cl.³ F04B *49/02;* **F01C** *1/12, 19/00, 21/00*

U.S. Cl. 417—310 **13 Claims**

1. A displacement turbine engine of the type including a rotatably supported power rotor of generally circular shape and having at least one peripheral piston formed thereon, and a sealing rotor of generally circular shape and means mounting said power and sealing rotors with a point of tangential contact with each other; said sealing rotor being formed with a piston recess receiving said piston as said power rotor rotates; and further including an engine block having a cylindrical recess receiving said power rotor for rotation therein with said piston adjacent the periphery thereof to form an expansion chamber space intermediate said piston and said point of tangential contact; intake valve means for admitting a working fluid under pressure into said expansion chamber space immediately after said piston is rotated out of said recess; and exhaust valve means exhausting said admitted fluid pressure prior to said piston again reentering said recess, the improvement comprising:

primary vacuum relief valve means responsive to development of a subexhaust pressure in said exhaust chamber space to place said expansion chamber space in communication with exhaust pressure while said expansion chamber space is expanding as said piston recess receives said piston, said primary vacuum relief valve means continuing communication with said expansion chamber space while



said piston travels in said recess, said primary vacuum relief valve means further terminating communication with said expansion chamber space after said piston is rotated out of said recess and prior to admitting said working fluid into said expansion chamber space, whereby drag produced by development of said subexhaust pressure is avoided.

4,417,860

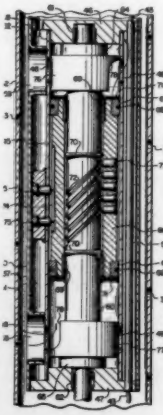
SUBMERSIBLE WELL PUMP

Orien N. Justice, Dallas, Tex., assignor to CamAct Pump Corp., Dallas, Tex.

Division of Ser. No. 5,845, Jan. 23, 1979, Pat. No. 4,291,588, which is a division of Ser. No. 747,884, Dec. 6, 1976, Pat. No. 4,145,166. This application Sep. 21, 1981, Ser. No. 304,111

Int. Cl.³ F04B *35/04*

U.S. Cl. 417—415 **3 Claims**



1. A submersible well pump adapted for use in a well of small bore comprising:

a generally cylindrical electrical motor having an axially aligned drive shaft;

a speed reducing transmission mounted on the top end of said motor, said transmission having an input shaft aligned

with and connected to the drive shaft of said motor and having an output shaft aligned with said input shaft, said transmission further comprising:

a housing;

input and output shafts mounted for rotation in said housing axially thereof, said shafts being axially aligned with each other and rotatively interconnected at their abutting ends, said shaft being mutually supportive against displacement of both relative axial position and shaft alignment to thereby reduce stress and vibration;

said input and output shafts each having a pinion mounted thereon for rotation therewith;

a pair of idler shafts mounted for rotation in said housing on opposite sides of said input and output shafts;

each of said idler shafts carrying a pair of gears being meshed with a pinion;

and an electrical conduit protective tube running lengthwise through said housing, for protecting an electrical conduit delivering power from a source located away from one end of said transmission to said electric motor connected to the other end of said transmission, said tubing being angularly offset from said idler shafts;

a pump mounted on the top end of said transmission, said pump having a shaft aligned with and connected to the output shaft of said transmission;

and an electrical power supply cable connected to said motor at the top end thereof and passing upwardly through the electrical conduit protective tube of said transmission and past said pump.

4,417,861

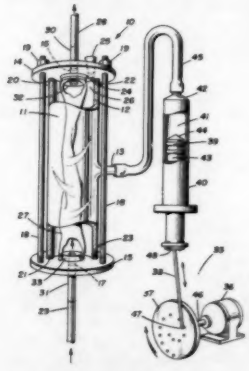
CELL CULTURE PUMPING SYSTEM

William R. Tolbert, Manchester, Mo., assignor to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 291,216, Aug. 10, 1981. This application Dec. 24, 1981, Ser. No. 334,341

Int. Cl.³ F04B *21/02*

U.S. Cl. 417—315 **5 Claims**



1. A low trauma, reversible flow pumping system for transfer of biological fluids containing fragile components which comprises a length of collapsible and flexible tubing having inlet and outlet means at opposite ends, each said end being in fluid communication with a two-way, gravity actuated check valve means having disposed therein a self-centering, vertically slidable weight member with a center of gravity below its sealing position and adapted to permit fluid to be pumped through said tubing in either direction, said tubing being sealing enclosed within a hydraulic fluid containing chamber and said chamber being in fluid communication with oscillatory pressure providing means to provide alternate expansion and collapsing of said tubing.

4,417,862

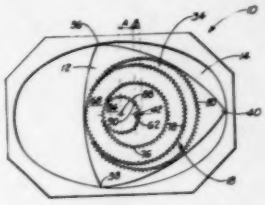
ROTARY MOTOR WITH MULTILOBED ROTOR AND ORBITING COUPLING MEANS

John W. Fenton, 1258 Aalapapa, Kailua, Hi. 96734

Filed Sep. 3, 1981, Ser. No. 298,925

Int. Cl.³ F01C *1/22, 17/02*

U.S. Cl. 418—54 **13 Claims**



1. A rotary motor comprising:

a housing having an internal chamber, the chamber surface being defined cross-sectionally by the equations

$$x=(A+B)\cos\alpha+R\cos(\alpha/M)$$

$$y+(A-B)\sin\alpha+KR\sin(\alpha/M)$$

where α is an angle ranging between 0 and $2\pi M$ radians where A, B and R are arbitrary constants, where M is an integer greater than or equal to 2, and where K is a number selected from the set consisting of $+1$ and -1;

a rotor disposed within the internal chamber of the housing, the rotor having M lobes, each lobe contacting the chamber surface, with the lobe extremities defining vertices of an equilateral polygon when M is greater than 2, and extremities of a straight line when M equals 2, the polygon and straight line having a circumscribed circle of radius R, having a centroid defining a first rotational axis extending through the rotor and parallel to the z-axis and having a converter engagement surface coaxial with the first rotational axis;

an output shaft fixedly supported by the housing and having a second rotational axis coextensive with the z-axis;

energy input means for powering movement of the rotor around the internal chamber surface in a selected orbital direction and parallel to the xy plane and for powering simultaneous rotational movement of the rotor about its first rotational axis; and

orbital coupling means operatively engaged with the rotor, for driving rotational movement of the output shaft in response to orbital movement of the rotor and rotational movement of the rotor about the first rotational axis, the orbital coupling means comprising:

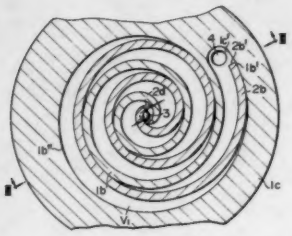
a circular converter member, slidingly engaged with the converter engagement surface of the rotor and having a third rotational axis offset from the first rotational axis by the distance B, the circular converter member movable in a combination of circular orbital movement and rotary movement about the third rotational axis in response to movement of the rotor; and

a rotary converter member, engaged with the circular converter member for driving rotation of the output shaft about the second rotational axis in response to movement of the circular converter member.

4,417,863
SCROLL MEMBER ASSEMBLY OF SCROLL-TYPE FLUID MACHINE

Masato Ikegawa; Kenji Tojo, and Masao Shiibayashi, all of Shimoinayoshi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 16, 1981, Ser. No. 225,741
Int. Cl.³ F01C 1/02
U.S. Cl. 418—55 14 Claims



1. A scroll-type fluid machine comprising an inlet port means, a pair of scroll members, each of said scroll members including an end plate and a wrap protruding upright from said end plate, said scroll members being assembled together with said wraps fitting each other so as to define at least a pair of closed spaces therebetween, means for mounting one of said scroll members so as to enable an orbiting motion relative to the other scroll member, the wrap of one of the scroll members has a scrolling angle which is greater than the scrolling angle of the wrap of the other of the scroll members, and wherein a starting end portion of at least one of the wraps is cut away from the theoretical starting point of said one wrap, which theoretical starting point would sealingly engage the other wrap at some time during the orbiting motion so as to enable one of said closed spaces to communicate with a discharge port of the fluid machine at an earlier point in time than the other of said closed spaces thereby substantially equalizing discharge pressures of both of said closed spaces.

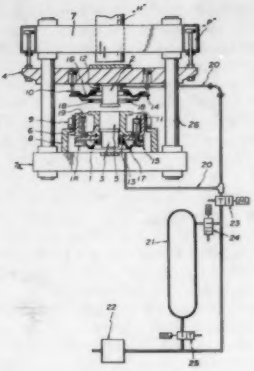
4,417,864
VACUUM TYPE BRICK FORMING MACHINE

Iwasaki Shigeo, and Haguchi Hiroshi, both of Okayama, Japan, assignors to Mitsuishi Fukai Tekkosho, Ltd., Bizen, Japan

PCT No. PCT/JP81/00111, § 371 Date Dec. 16, 1981, § 102(e) Date Dec. 16, 1981, PCT Pub. No. WO81/03304, PCT Pub. Date Nov. 26, 1981
PCT Filed May 15, 1981, Ser. No. 333,821
Int. Cl.³ B30B 11/02; B28B 3/02
U.S. Cl. 425—73 10 Claims

1. A vacuum type brick forming machine comprising a mold in which brick raw material is filled, upper and lower pistons which have a center line and which press and form under vacuum said raw material into bricks as said mold and raw material are placed in the center line of said pistons, and a mechanism which transfers said mold containing said formed bricks to a position off said center line and there withdraws formed bricks and fills raw material into said mold again, characterised by:

a main body having a lower half and supporting a frame which can be lifted up and down having said upper piston mounted thereon in an upper vacuum room enclosing said upper piston fastened at its lower side, upper air cylinders installed inside said frame connected to an upper sealing ring which is adapted for contacting an upper face of said mold, a truck adapted to move back and forth on rails laid on said lower half of said main body a lower vacuum room depending from said truck encircling said lower piston, the upper face of said lower vacuum room having airtight contact with the underside of the mold by force of springs, lower air cylinders which are installed inside said truck for lifting up and down a lower sealing ring located below said vacuum room for making and breaking contact with the upper face of the lower half of the main body, and upper and lower skirts which are made of soft material

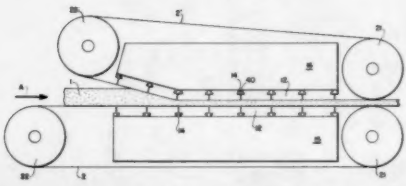


and can be stretched and contracted freely connecting the upper vacuum room with the upper sealing ring and the lower vacuum room with the lower sealing ring respectively.

4,417,865
CONTINUOUSLY OPERATING PRESS

Heinrich Pfeiffer, Eppingen, Fed. Rep. of Germany, assignor to Maschinenfabrik J. Dieffenbacher GmbH Co., Eppingen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 286,315, Jul. 24, 1981. This application Nov. 6, 1981, Ser. No. 318,933
Claims priority, application Fed. Rep. of Germany, Nov. 14, 1980, 3042972
Int. Cl.³ B29J 5/04
U.S. Cl. 425—371 8 Claims



1. An apparatus for continuously receiving and pressing material for producing particleboard and fiberboard, comprising:

(a) pressing means comprising a movable upper platen and a fixed lower platen;

(b) a ram mounted to said upper platen to move said upper platen to define a press gap between said upper platen and said lower platen for receiving material to be pressed;

(c) a first endless conveyor band disposed around said lower platen;

(d) a second endless conveyor band disposed around said upper platen;

(e) a plurality of rolls for supporting and guiding said first and second bands, respectively; and

(f) support means for said rolls, comprising: a plurality of change plates, each of said change plates being removably mounted to said lower platen or said upper platen and including: a first rod mounted in a first level and con-

nected in supporting relation with one of said rolls, a plurality of T-shaped web plates connected to said first rod in said first level and to a pressure plate in a second level, whereby material moved between said upper platen and said lower platen is subjected to pressure to form a compressed product and counter pressure from said material being pressed is transferred to said pressure plate.

4,417,866

PRESS FOR THE CONTINUOUS PRODUCTION OF PRESSEDBOARD

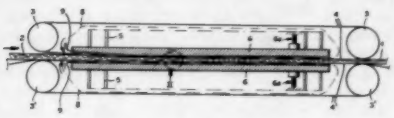
Hans-Dietrich Sitzler, Nettetal-Hinsbeck, Fed. Rep. of Germany, assignor to G. Siempelkamp GmbH & Co., Krefeld, Fed. Rep. of Germany

Filed Apr. 29, 1982, Ser. No. 373,225

Claims priority, application Fed. Rep. of Germany, May 6, 1981, 3117778

Int. Cl.³ B29J *5/08*

U.S. Cl. 425—364 R **6 Claims**



1. A press for the continuous production of pressedboard from a layer of comminuted material, said press comprising:

a pair of spaced-apart press platens;

respective steel pressing belts displaceable along said platens and juxtaposed with one another to define a space traversed by said layer and within which said layer is pressed, each of said belts being spaced from the respective platen to form a gap therewith;

a multiplicity of spaced-apart rod-shaped cageless rollers in each of said gaps; and

means for feeding said rollers to said gaps with a spacing s substantially equal to the thickness d of said belts, said rollers having diameters D less than 20 mm and approximately equal to 10 d.

4,417,867

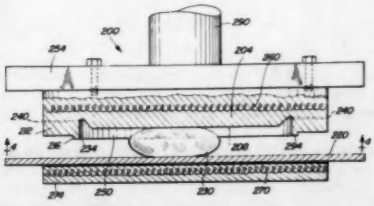
DOUGH FORMING MOLD ASSEMBLY

Marshall Bauer, Chicago, Ill., assignor to Nation Enterprises, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 270,510, Jun. 4, 1981. This application Jun. 1, 1982, Ser. No. 384,044

Int. Cl.³ B29C *1/00*; A21C *11/00*

U.S. Cl. 425—394 **1 Claim**



1. A dough-molding apparatus for dough-shaping, functional, positive compressive coaction in cooperation with planar platen for transforming a deformable mass of dough into a generally dish-like sheet defining a substantially flat base integrally formed with an upstanding circumambient bead-like rim,

said dough-molding apparatus comprising a dough-confining ring, a generally planar pressure plate spanning interiorly of and bounded and integral with said ring, said ring including a wall portion projecting normally of a dough-presented, dough-engaging face of said plate extending beyond said face and abuttingly engaging a flat dough-mass-supporting substrate,

said dough-molding apparatus being formed at a juncture of an inside surface of said ring and said plate with an endless perimetric moat-like groove invading said plate and circumscribing a flat central zone thereof,

air passage means formed in said ring and communicating between said moat-like groove and ambient atmosphere for facilitating escape of air trapped within walls defining a dough-molding cavity delineated by said dough-molding apparatus and said floor-like dough-mass-supporting substrate therebeneath.

4,417,868

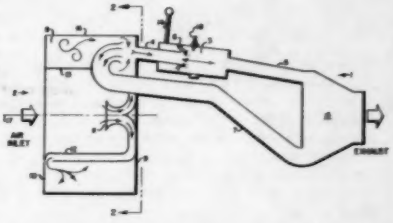
COMPACT PLENUM FOR PULSE COMBUSTORS

Abbott A. Putnam, Columbus, Ohio, assignor to Battelle Development Corporation, Columbus, Ohio

Filed Sep. 4, 1981, Ser. No. 299,567

Int. Cl.³ F23C *11/04*

U.S. Cl. 431—1 **6 Claims**



1. A combustion system comprising a plurality of pulse combustors having air inlets, fuel inlets, combustion chambers and exhaust outlets and having substantially equal natural acoustic frequencies, f, said air inlets being commonly joined to an inlet plenum wherein said inlet plenum comprises

(A) housing means forming an annular chamber, the outer perimeter of which is substantially less than $^{s}/_{f}$, where $^{s}/_{s}$ equals the speed of sound

(B) means connecting the annular chamber with the air inlets of the pulse combustors,

(C) means for admitting a source of oxygen to the annular chamber, and

(D) baffling means in the annular chamber creating a circuitous acoustic path therearound of length substantially equal to $^{s}/_{f}$.

4,417,869

FLAME ROLLOUT CONDITION SAFETY DEVICE FOR A COMBUSTION SYSTEM

Lloyd F. Copenhaver, Indianapolis, Ind., assignor to Carrier Corporation, Syracuse, N.Y.

Filed Feb. 2, 1981, Ser. No. 230,561

Int. Cl.³ G08B *17/12*; F23N *5/24*

U.S. Cl. 431—21 **2 Claims**

1. A safety device for discontinuing the flow of fuel to the burners of a combustion system when a flame rollout condition occurs at the burners, said device comprising:

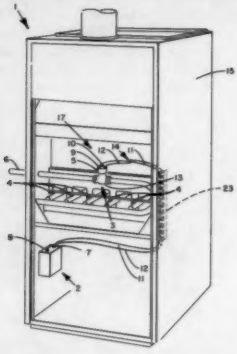
a fuel supply means for supplying fuel to the burners of the combustion system;

an electrically actuated valve means for controlling the flow of fuel from the fuel supply means to the burners, said valve means allowing fuel flow to the burners only when electrical power is supplied to the valve means;

a power supply means for providing electrical power for the electrically actuated valve means;

an electrical power supply lead having a conductor, with a covering of electrical insulation which is capable of being melted or burned away by heat, for supplying electrical power from the power supply means to the electrically actuated valve means, said lead having at least one section located at a position where flame rollout can occur; and

a grounding medium in contact with each section of the power supply lead which is located at a position where



flame rollout can occur, said grounding medium providing a low resistance path for shunting the electrical power from the power supply means to ground only when the conductor of the power supply lead contacts the grounding medium whereby electrical power from the power supply means does not reach the electrically actuated valve means and fuel flow to the burners of the combustion system is discontinued if a flame rollout condition occurs.

4,417,870

LIQUID FUEL COMBUSTION APPARATUS

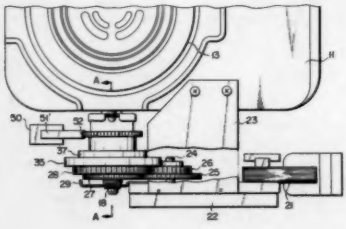
Shigeru Nakamura, Kamo; Yoshihiko Ueki, Niigata, and Hiroshi Takachi, Muramatsu, all of Japan, assignors to Toshiba Heating Appliances Co., Ltd., Kamo, Japan

Filed Sep. 2, 1981, Ser. No. 298,895

Claims priority, application Japan, Sep. 10, 1980, 55-125451

Int. Cl.³ F23Q *25/00*

U.S. Cl. 431—33 **10 Claims**



1. A liquid fuel combustion apparatus comprising:

(a) a wick holder;

(b) first means for vertically moving said wick holder between a raised combustion position and a lowered extinguished position, said means including a rotatable shaft;

(c) a driving motor;

(d) rotational force transmitting means operatively connecting said driving motor to said rotatable shaft for transmitting the rotational force of said driving motor to said rotatable shaft so as to rotate said rotatable shaft in a first direction, thereby moving said wick holder vertically from its lowered extinguished position to its raised combustion position, said rotational force transmitting means comprising:

(i) a clutch cam fixed on said rotatable shaft;

(ii) a clutch supporting disc operatively connected to said driving motor such that rotation of said driving motor causes rotation of said clutch supporting disc; and

(iii) a clutch carried by said clutch supporting disc in position:

(A) to engage said clutch cam during rotation of said clutch supporting disc, thereby transmitting the rotational force of said driving motor to said rotatable shaft and causing said rotatable shaft to rotate in said first direction, and

(B) to disengage from said clutch cam when said wick holder has reached its raised combustion position;

(e) second means for automatically disengaging said driving motor when said wick holder has reached its raised combustion position;

(f) a spring which is operatively connected to said rotatable shaft so as to be charged by the rotation of said rotatable shaft in said first direction and so as to rotate said rotatable shaft in the opposite direction upon discharge;

(g) holding means operatively connected to said rotational force transmitting means for preventing the rotation of said rotatable shaft in said opposite direction under the urging of said spring; and

(h) releasing means for releasing said holding means, thereby permitting said wick holder to return to its lowered extinguished position under the urging of said spring.

4,417,871

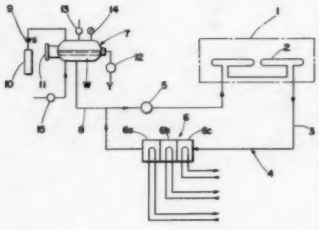
METHOD AND APPARATUS FOR COOLING SKID PIPES IN CONTINUOUS SLAB REHEATING FURNACE

Mitio Tarumi, Hirakata; Tetsuya Tokitsu, Takarazuka, and Yoshio Matsumoto, Takatsuki, all of Japan, assignors to Chugai Ro Kogyo Co., Ltd., Osaka, Japan

Filed Mar. 19, 1982, Ser. No. 359,991

Int. Cl.³ F27D *3/02;* **F25B** *29/00;* **F28D** *13/00*

U.S. Cl. 432—1 **2 Claims**



2. A method for cooling skid pipes of a continuous slab reheating furnace, the method comprising:

supplying clarified water at generally 190° C. to the skid pipes;

passing the water through the skid pipes at a rate and pressure which causes the water to be heated to generally 200° C.;

cooling the 200° C. water to generally 190° C. and recirculating the 190° C. water back to the skid pipes;

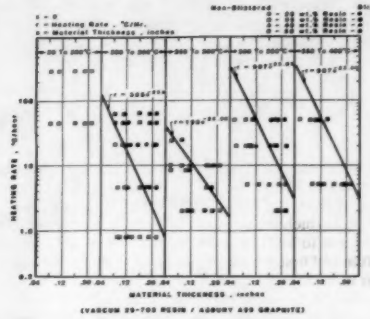
maintaining a hot water-nitrogen interface in fluid communication with the recirculating hot water to prevent dissolution of oxygen into the hot water; and,

adjusting nitrogen pressure at the hot water-nitrogen interface to adjust the hot water pressure in the skid pipes such that the temperature of the recirculating hot water is also adjusted.

4,417,872
HEAT TREATING

Larry G. Christner, Sandy Hook, and Dana A. Kelley, New Milford, both of Conn., assignors to Energy Research Corporation, Danbury, Conn.

Filed Feb. 1, 1982, Ser. No. 344,489
Int. Cl.³ F26B 9/12; C10B 51/00
U.S. Cl. 432—18 15 Claims



1. A method of heat treating a material having carbon degradable content in order to convert said carbon degradable content to carbon comprising the steps of:

defining a temperature range;

segmenting the temperature range into at least two intervals including establishing at least a first interval capable of supporting a first maximum heating rate for said material without blistering and a second interval capable of supporting a second maximum heating rate for said material without blistering, said first maximum heating rate being different from said second maximum heating rate;

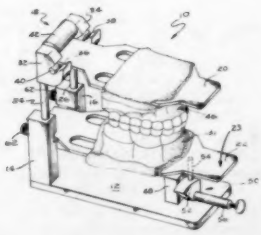
heating said material over an interval corresponding to said first interval at a first rate equal to or below said first maximum rate;

and heating said material over a further interval corresponding to said second interval at a second rate different from said first rate and equal to or below said second maximum rate.

4,417,873
DENTAL ARTICULATOR

Walenty Kulas, 35 Amherst Ave., Feeding Hills, Mass. 01030

Filed Jul. 21, 1981, Ser. No. 285,597
Int. Cl.³ A61C 11/00
U.S. Cl. 433—57 4 Claims



1. A dental articulator comprising:

(a) a longitudinally-extending base;

(b) a pair of spaced columns rising perpendicularly from the base;

(c) means for supporting a first denture horizontally above the base, said means comprising an upper longitudinally-extending carrier that is pivotally attached to said columns for movement in a vertical plane, said carrier being adapted to be positioned horizontally above the base or swung away from the base;

(d) means attached to the columns for selectably adjusting the height of the upper carrier above the base;

(e) means for supporting a second denture above the base, between the base and said upper carrier, said means comprising a lower longitudinally-extending carrier that is adapted to support the second denture in an opposed relationship to the first denture; and

(f) means for permitting three-dimensional movement of the lower carrier, while the carrier is in the articulator, to simulate the movement of a human lower jaw, said means comprising a pair of rounded trunnion pins that extend from opposite sides of said lower carrier into respective, transverse and substantially straight grooves in said columns that are stationary relative to said columns and substantially parallel to one another, said grooves each being elongated and having a length substantially greater than the diameter of each pin, whereby the lower carrier can be swiveled freely side-to-side in the grooves, can be moved forwardly and rearwardly in the grooves a distance substantially greater than the diameter of either pin, and can be pivoted vertically toward or away from the base.

4,417,874
SUCTION DEVICE SUCH AS A DENTAL ASPIRATOR OR SUCKER

Bror A. E. Anderson, Österängsvägen 24, S–18246 Enebyberg, Sweden, and Arne B. Mo, Gästrikegatan 15, S–11334 Stockholm, Sweden

PCT No. PCT/SE81/00248, § 371 Date May 4, 1982, § 102(e) Date May 4, 1982, PCT Pub. No. W082/00764, PCT Pub. Date Mar. 18, 1982
PCT Filed Sep. 3, 1981, Ser. No. 380,867
Claims priority, application Sweden, Sep. 4, 1980, 8006160; Jun. 5, 1981, 8103566
Int. Cl.³ A61C 17/04
U.S. Cl. 433—96 2 Claims

1. In a suction tube intended as saliva sucker or surgical sucker comprising a cylindrical plastic tube (**10**) at least one portion of whose length is provided with a corrugation in the form of bellows folds having ridges and intermediate grooves, the bellows folds having sides (**16, 17**) of different widths which are so shaped and disposed that upon axial compression of the respective folded portion of the tube, the narrower sides (**16**) will snap over a center position to a position under the adjacent wider sides (**17**), whereafter any bending of the compressed portion for shaping the tube will result in the bend portion substantially remaining in its bent position; the improvement in which the bottoms of the grooves (**20**) have a plurality of suction openings (**21**) which are substantially evenly distributed along the circumference of the respective groove, one end of the tube being adapted to be connected to a suction source whereas the other end (**11, 14**) of the tube is closed, the suction openings being open (**20a**) not only when

the bellows folds are in the extended position, but also when the bellows folds are in their compressed position.

4,417,875

FOOT CONTROLLER FOR DENTAL INSTRUMENT

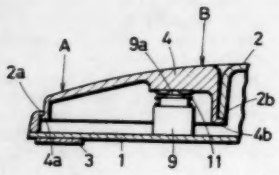
Takahiro Matsui, Uji, Japan, assignor to Kabushiki Kaisha Morita Seisakusho, Kyoto, Japan

Filed Mar. 31, 1981, Ser. No. 249,386

Claims priority, application Japan, Dec. 2, 1980, 55-173377[U]

Int. Cl.³ A61C *1/02*

U.S. Cl. 433—101 **1 Claim**



1. A foot controller for a dental instrument comprising:
a base;
a foot controller cover provided on said base;
a pair of pedal fitting openings provided in said foot controller cover adjacent each other;
a flanged rear edge provide in each pedal fitting opening;
a front pensile edge provided in each pedal fitting opening;
a pedal provided in each of said pedal fitting openings;
a bent rear edge provided on each pedal for engagement with said flanged rear edges;
a bent front edge provided on each pedal for engagement with said front pensile edges;
a pair of air valves provided on said base, each of said air valves being provided subjacent one of said pedals, said air valves further being provided closer said front pensile edge than said flanged rear edge;
a valve rod extending from each of said air valves and engaging an undersurface of one of said pedals; and
a spring surrounding each of said valve rods and engaging said undersurface of each of said pedals for upwardly biasing each of said pedals.

4,417,876

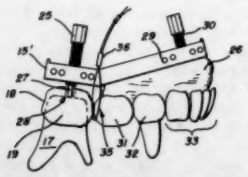
NONDESTRUCTIVE DENTAL CAP REMOVAL METHODS

Joseph A. Lynch, 51 E. 1st Ave., Hialeah, Fla. 33010

Filed Dec. 11, 1981, Ser. No. 329,735

Int. Cl.³ A61C *3/00*

U.S. Cl. 433—161 **10 Claims**



1. The improved non-destructive method of removing dental crown and bridge caps anchored on a least one shaped tooth stub, comprising the steps of,
disposing a metal stabilizing member with a bolt threaded therethrough with the bolt extending through the hole in contact with the tooth stub in a substantially stabilized position for raising the cap without shear forces from the tooth stub by means of pressure on the stub when the bolt is pressed against the stub,
securing flexible filamentary means about the cap and stabilizing member with the stabilizing member in said stabilized position to grasp the cap and form with the stabilizing member a composite unit that may be moved to dislodge the cap from the tooth stub, and
producing a dislodging pressure for non-destructive unseating of the cap from the stub by rotation of the threaded bolt against the tooth stub to thereby move said composite unit away from said stub.

4,417,877

WATER-JET DRIVE MECHANISM FOR DRIVING AND CONTROLLING OF PARTICULARLY SHALLOW-DRAUGHT WATERCRAFTS

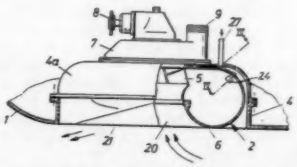
Franz Krautkremer; Achim Kessler, both of Spay, and Gerd Krautkraemer, Boppard-Buchenau, all of Fed. Rep. of Germany, assignors to Schottel-Werft Josef Becker GmbH & Co. KG, Spay, Fed. Rep. of Germany

Filed Jun. 9, 1981, Ser. No. 271,897

Claims priority, application Fed. Rep. of Germany, Jun. 19, 1980, 3022909

Int. Cl.³ B63H *11/00*

U.S. Cl. 440—38 **6 Claims**



1. A water-jet drive mechanism adapted to propel a watercraft, comprising a centrifugal pump having a spiral housing and an impeller which is rotatably supported in said spiral housing for effecting a fluid flow through said spiral housing, means defining a ventilating opening through a wall of said spiral housing for facilitating the flow of gases from the inside of said spiral housing to the region outside said spiral housing, and means defining a ventilating valve in said ventilating opening responsive to said fluid flow through said spiral housing effected by said impeller for controlling the flow of gases through said ventilating opening.

4,417,878

PROPULSION MACHINERY FOR LNG SHIPS

Stein Koren, Moss, Norway, assignor to Moss Rosenberg Verft A/S, Moss, Norway

Filed Mar. 25, 1981, Ser. No. 247,275

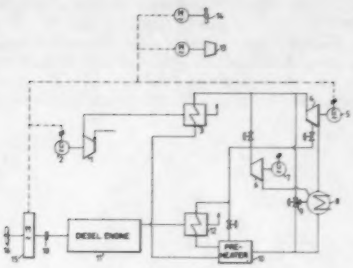
Claims priority, application Norway, Mar. 31, 1980, 800935

Int. Cl.³ B63H *21/20*

U.S. Cl. 440—3 **5 Claims**

1. A ship propulsion system for LNG tank ships using combustible bunker oil and boiled off cargo gas, said system including a propeller, an electromotor operatively engaged with said propeller for driving the propeller, at least one diesel engine operatively engaged with said propeller for selectively driving the propeller with said electromotor or independently thereof, and combined gas turbine-steam turbine electrical plant means operatively connected to said electromotor for driving said

propeller; said combined gas turbine-steam turbine-electrical plant fueled by boiled off gas, includes exhaust boiler means for



receiving and utilizing exhaust gas from the diesel engine for the production of steam used in the turbine.

4,417,879

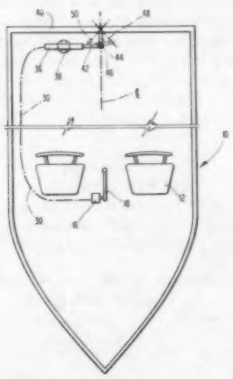
FLEXIBLE SHAFT STICK CONTROL MECHANISM FOR STEERING MARINE VESSELS

Walter Kulischenko, East Brunswick, N.J., assignor to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 268,539, May 29, 1981. This application Jul. 27, 1981, Ser. No. 286,814

Int. Cl.³ B63H *21/26*

U.S. Cl. 440—62 **1 Claim**



1. In a marine vessel steering system wherein gearless steering control means effects rotation of rotatable flexible shaft means for controlling movement of a steering member through screw means which converts rotary motion from said rotatable flexible shaft means to linear motion, said linear motion effecting movement of said steering member which controls direction of travel of said marine vessel, the combination therewith of the improvement comprising

a driver pulley rotating in response to movement of said steering control means,

at least one pulley driven in response to rotation of said driver pulley,

belt means operably interconnecting said driver pulley and said driven pulley whereby said driven pulley rotates a greater number of revolutions than said driver pulley,

said steering control means including a steering stick mounted to an input shaft of said driver pulley, said stick unattached to any member at least at one end and adaptably mounted forwardly at an interior side portion of said vessel to permit movement of said stick only forwardly and rearwardly when said stick is mounted for forward and rearward movement and only transversely from left to right or right to left when said stick is mounted for transverse movement whereby movement of said stick forwardly and rearwardly rotates said driver pulley a total of not more than 180°, and movement of said stick transversely said vessel from left to right or right to left rotates said driver pulley a total of not more than 180°,

said at least one driven pulley comprising two driven pulleys successively driven in response to rotation of said driver pulley, each of said driver and driven pulleys having a sprocket-spindle, a first belt means operably interconnecting said driver pulley and sprocket-spindle of first of said two driven pulleys, a second belt means operably interconnecting said first driven pulley and sprocket-spindle of second of said two driven pulleys, and a third belt means interconnecting said second driven pulley with an output shaft, said output shaft having a smaller diameter than diameter of said second driven pulley for rotating a greater number of revolutions than said second driven pulley, said rotatable flexible shaft means having one end connected to an end of said rotating output shaft and other end of said flexible shaft connected to said screw means.

4,417,880

JOINT ASSEMBLY

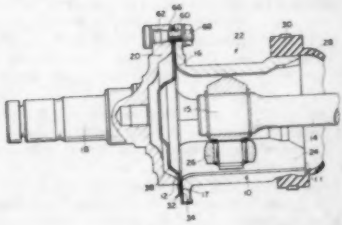
Tadanobu Kumagai, Toyota, and Yoshinobu Iwase, Toyokawa, both of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Aisin Seiki Kabushiki Kaisha, Kariya, both of, Japan

Filed Jun. 28, 1982, Ser. No. 392,616

Claims priority, application Japan, Oct. 6, 1981, 56/147729[U]

Int. Cl.³ F16D *3/30, 3/20*

U.S. Cl. 464—111 **5 Claims**



1. A joint assembly comprising a first shaft; a casing having two openings at its axial ends; receiving an end portion of the first shaft through the opening at one end and provided with a flange on the periphery of the other end; a second shaft provided at its one end with a flange to be joined to the flange of the casing, and a sealing means disposed between said flanges, said sealing means including a sealing member having an endless shape, and an end cover with its periphery held between said flanges and adapted to hold the sealing member in association with the flange of the casing, said end cover having first support portions spaced in equal interval from one another along said periphery, second support portions located between the adjacent first support portions, formed by folding back parts of the end cover and provided with bolt holes, a setting portion for said sealing member located inside of the first and second support portions, and a concave portion located inside of said setting portion, wherein the face of said setting portion on which said sealing member sits is recessed for a depth corresponding to the thickness of the end cover, from the faces of said first and second support portions which are in contact with the flange of said casing, and the faces of said second support portions which are in contact with the flange of said

second shaft are in the same plane as the face of said setting portion on the side opposite to the face on which said sealing member sits.

4,417,881

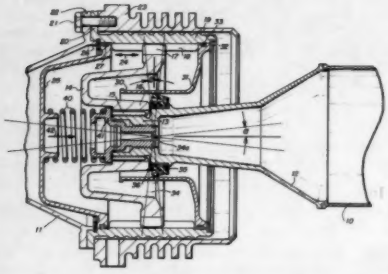
DRIVE SHAFT SEAL

Lewis L. Dyson, Bedford, Tex., assignor to Textron Inc., Providence, R.I.

Continuation of Ser. No. 46,032, Jun. 6, 1979, abandoned. This application Dec. 11, 1981, Ser. No. 329,750

Int. Cl.³ F16D *3/18*

U.S. Cl. 464—150 **4 Claims**



1. In a coupling for one end of a floating drive shaft where lubricant is to be maintained in a zone of contact between a crown gear and an elongated interior spline, the combination which comprises:

(a) a cylinder interiorally supporting said spline substantially coaxial of said one end of said shaft and closed by a pan structure having a lip which engages the end of said cylinder adjacent to said one end of said shaft;

(b) support structure nested in said cylinder supporting said crown gear from said one end of said shaft;

(c) a cylindrical wear sleeve encompassing the end of said shaft and having a flange closure engaging and partially closing the end opposite said closed end of said cylinder to enclose said spline and having an open end portion spanning the pivotal plane of said crown gear radially inward of the zone of contact between the crown gear and interior spline; and

(d) a resilient seal ring substantially at said pivotal plane carried by said drive shaft to establish a lubricant seal between said shaft and the interior surface of said end portion to complete closure of said cylinder while accommodating misalignment between the axes of said shaft and of said cylinder and axial translation of said shaft relative to said cylinder.

4,417,882

METHOD AND APPARATUS FOR ERECTING A CARTON TRAY

Kay Wallin, Halmstad, Sweden, assignor to Sprinter System AB, Sweden

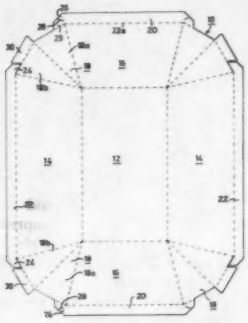
Filed Oct. 21, 1980, Ser. No. 199,674

Claims priority, application Sweden, Oct. 30, 1979, 7908988

Int. Cl.³ B31B *1/46*

U.S. Cl. 493—174 **10 Claims**

1. A method of erecting a carton tray, the side and end walls of which are provided with outwardly turned edge flaps, at least on three sides and preferably on all four sides, for receiving a lid intended for attaching by means of a binding agent on the rim formed by the edge flaps, the end portions of the edge flaps being extended with end flaps situated one on top of the other and fastened by a binding agent for connecting the edge flaps to each other the erection being performed in two separate phases in two separate tools, the erection in the first tool being performed by means of a plunger which presses the carton blank down into a forming chamber to form a partially ready-shaped tray with the side walls and end walls thereof erected in their final position, characterized in that joining of the two end flaps in the respective corner of the tray is performed by only one pair of opposing edge flaps being folded down by the plunger together with their associated end flaps to a position substantially in a plane parallel to the bottom of the tray, whereafter these end flaps are folded up in a subsequent operation and are attached to the outside of the end flaps of the



second pair of edge flaps, which together with their end flaps remain substantially in the same plane as the associated side wall of the tray, and that the partially erected tray is subsequently ejected out from the underside of the forming chamber, whereupon this partially erected tray is transferred to the second tool where all edge flaps are folded down to their first position over the edge of folding bars or the like to an oblique downward direction position, whereafter the tray is ejected form the forming chamber of the second tool as the edge flaps resiliently return to a position for receiving the lid.

4,417,883

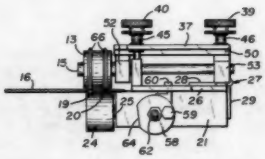
APPARATUS FOR CREASING PAPER USED IN THE PRODUCTION OF GYPSUM WALLBOARD

Robert L. Granger, and Alva P. Alexander, Jr., both of Houston, Tex., assignors to United States Gypsum Company, Chicago, Ill.

Filed Nov. 5, 1981, Ser. No. 318,521

Int. Cl.³ B26D *3/08*

U.S. Cl. 493—403 **5 Claims**



1. An apparatus for applying parallel spaced-apart creases to paper adapted for use as cover sheets in the manufacture of gypsum wallboard, which comprises:

(1) a mounting plate,

(2) a base plate,

(3) hinge means having one portion connected to an edge of said base plate and the other portion connected to said mounting plate, thereby hingedly mounting said base plate on said mounting plate, wherein said hinge means comprises a pair of hinge members hingedly connected to each other by a hinge pin, one of said hinge members being

affixed to said base plate and the other of said hinge members being affixed to said mounting plate,

(4) supporting posts affixed to said base plate,

(5) a floating plate adjustably supported by said supporting posts, wherein the means for adjustably supporting said floating plate comprise screws threadedly engaging threaded openings in said supporting posts, means affixed to said screws for engaging and supporting the lower surface of said floating plate, and means on the ends of said screws for manual engaging and adjusting,

(6) adjustable means spring-loading said floating plate toward said base plate, comprising helical springs mounted over said screws,

(7) a creasing wheel rotatably mounted on said floating plate having a pair of annular spaced-apart creasing ribs provided on the surface thereof, and bearings mounted on said floating plate having a shaft journaled therein, with said creasing wheel mounted on one end of said shaft,

(8) a backing roller rotatably mounted on said mounting plate,

(9) means for raising and lowering said base plate from operative to inoperative positions, comprising cam means rotatably mounted on said mounting plate and having a cam surface engaging the surface of said base plate, and hand operating means for revolving said cam means, wherein a portion of said cam surface is flat for engaging and maintaining said mounting plate in inoperative position, and

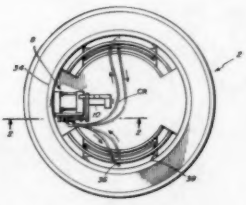
(10) means for locking said base plate in operative position, wherein said cam means is provided with an integral hook, wherein said base plate is provided with a slot, and wherein said hook is adapted to extend through said slot and to engage the upper surface of said base plate in locked position when said apparatus is in operative position.

4,417,884

CENTRIFUGE TIMER CLAMP

Donald W. Schoendorfer, Brookline, and Allen Latham, Jr., Jamaica Plain, both of Mass., assignors to Haemonetics Corporation, Braintree, Mass.

Filed Jul. 9, 1981, Ser. No. 281,650
Int. Cl.³ B04B *11/00*
U.S. Cl. 494—4 **16 Claims**



1. Centrifuge apparatus comprising:

a. a first means for containing first and second volumes of fluid;

b. a fluid path intermediate said first and second volumes for providing fluid communications therebetween;

c. a piston disposed within said first means and capable of bidirectional movement therein;

d. valve means for controlling the velocity of the fluid flow between said first and second volumes; and

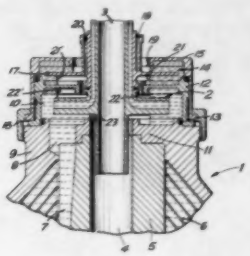
e. cam means coupled to said piston having at least one actuating surface which moves in proportion to the movement of said piston in response to centrifugal force.

4,417,885

CENTRIFUGE WITH VERTICAL AXIS OF ROTATION

Werner Kohlstette, and Willi Niemerg, both of Oelde, Fed. Rep. of Germany, assignors to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Oct. 14, 1982, Ser. No. 434,220
Int. Cl.³ B04B *15/00*
U.S. Cl. 494—23 **2 Claims**



1. In a centrifuge with a vertical axis of roation, having at least one skimmer in a skimming compartment in a centrifuge drum for continuously diverting a liquid phase being clarified or separated in the drum, a sealing disk rigidly connected to the skimmer above the skimming compartment and that extends into a blocking compartment rotating along with the drum and which is fillable with a blocking fluid, wherein the skimmer is stationary and the skimmer and the sealing disk are positioned at a distance from the rotating components of the drum, the improvement comprising: means providing fluid communication between the portions of the skimming and blocking compartments that are positioned below the sealing disk and above the skimmer; and means forming a channel connected to said portions of the skimming and blocking compartments and receptive of a gas at a higher than atmospheric pressure for shifting the fluid level in said portions radially outwardly from the vertical axis of rotation to prevent blocking fluid from entering the skimming compartment.

4,417,886

CATHETER INTRODUCTION SET

Paul L. Frankhouser, Reading, Pa., and Ketan Shevde, Great Neck, N.Y., assignors to Arrow International, Inc., Reading, Pa.

Filed Nov. 5, 1981, Ser. No. 318,469
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1981, 3141888
Int. Cl.³ A61M *5/00; 25/00*
U.S. Cl. 604—53 **7 Claims**

7. A method of introduction of a catheter into a blood vessel of a patient comprising the steps of using a hollow introducer needle having a catheter telescopically fitted over the needle shank, the needle having a beveled tip which projects beyond the end of the catheter when the catheter is on the needle, wherein said needle has a tubular member extending rearwardly from the distal end thereof, an elongated flexible wire guide within the tubular member and means for advancing the wire guide through the hollow needle and outwardly through the needle tip, the method comprising: puncturing a selected blood vessel with the needle, thereafter while the needle tip is within the blood vessel, advancing the wire guide through the needle until a predetermined length is positioned within the blood vessel, thereafter advancing the catheter off the needle and over the wire guide until the catheter is placed within the

vessel and then separating and withdrawing the needle, the tubular member and the wire guide from the positioned catheter.

4,417,887

CONNECTOR FOR CATHETER

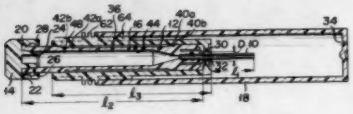
Isei Koshi, Fujinomiya, Japan, assignor to Fuji Terumo Co., Ltd., Fujinomiya, Japan

Filed Sep. 28, 1982, Ser. No. 426,246

Claims priority, application Japan, Oct. 30, 1981, 56-172929

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—162 **10 Claims**



1. A connector for a catheter, which comprises:

a hub provided at the leading end thereof with a hollow needle tube;

a cap capable of detachably attaching itself to the rear end of the hub and watertightly sealing the interior of the hub;

a sheath in the shape of a blind cylinder for admitting therein the hub from the needle tube side while allowing itself to be slidably fitted around the outer side of the hub, the blind cylinder being provided in the closed end thereof with an orifice for permitting the needle tube to be thrust out therethrough; and

a case of the shape of a blind cylinder for admitting therein the sheath from the closed end side thereof while allowing itself to be detachably fitted round one end part of the sheath;

the hub and the sheath having relative lengths such that the hub is free to move inside the sheath from a position at which the needle tube is fully thrust out through the orifice to a position at which it is wholly embraced within the sheath;

the hub and the sheath being provided on the outer and inner surfaces thereof respectively with stop means for stopping the hub and the sheath relative to each other at the position at which the needle tube is fully thrust out through the orifice to the position at which it is wholly embraced within the sheath;

the orifice having a diameter such that when the needle tube thrust out through the orifice is retracted to be embraced again within the sheath, the indwelling catheter meanwhile fitted fast around the outer side of the needle tube is allowed to pass through the orifice into the sheath; and

the case having a length such that the hub and the cap may be completely incased therein, with the needle tube incased within the sheath, the hub stopped fast to the sheath by the stop means, and the case extended from the cap side of the hub and fitted at one end thereof around the sheath.

4,417,888

PERCUTANEOUS IMPLANT

Louis C. Cosentino, Wayzata, and Felix J. Martinez, Plymouth, both of Minn., assignors to Renal Systems, Inc., Minneapolis, Minn.

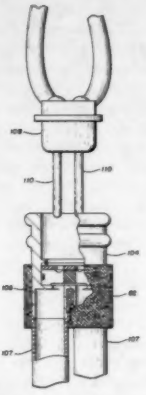
Filed Mar. 15, 1982, Ser. No. 358,229

Int. Cl.³ A61M *5/00*; A61F *1/00*

U.S. Cl. 604—175 **7 Claims**

1. A percutaneous device for providing communication between the body exterior and the body interior, the device comprising:

a rigid tubular body of biologically compatible material, said body including a transcutaneous stem portion defining a stem cavity therein and a plurality of subcutaneous arm portions joined to and in fluid communication with said stem cavity, said stem having a substantially constant outer diameter along its subcutaneous portion and to at least the excutaneous portion of the stem, an elastomeric septum within said stem cavity, and means within said stem cavity for holding said septum member in a fixed



relationship to said arms so as to provide a separate interruptable seal between each of said arms and said stem cavity, and said device including a porous tissue ingrowth media on at least a part of the exterior subcutaneous surfaces of the device and wherein said ingrowth media is limited to said subcutaneous surfaces.

4,417,889

DEVICE FOR A PORTABLE AUTOMATIC SYRINGE

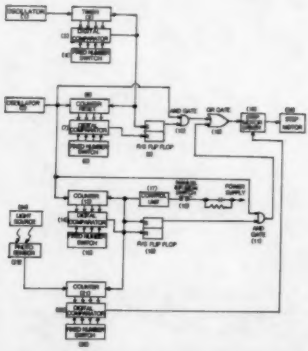
Soo-Bong Choi, 47-3, 4-Ka, Namdaemoon-Ro, Joong-Ku, Seoul, Rep. of Korea

Filed Sep. 8, 1981, Ser. No. 299,951

Claims priority, application Rep. of Korea, Dec. 31, 1980, 80-5060; Dec. 31, 1980, 80-8520[U]; Dec. 31, 1980, 80-8521[U]

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—246 **4 Claims**



1. In a portable automatic insulin injection syringe pump device including a step motor and a motor driving circuit, the improvement comprising:

(a) means for setting an injection time period comprising a first oscillator for producing pulses, a timer connected to said oscillator to count said pulses, a first fixed number switch for presetting a desired injection time, and a first

digital comparator for comparing the outout of said timer with said first switch;

(b) means for injecting a prescribed insulin dosage comprising a second oscillator for producing pulses slower than said first oscillator, a counter for counting said pulses, a second fixed number switch for presetting the prescribed amount of injections, and a second digital comparator for comparing the output of said counter and said second switch;

(c) means for injecting an increased insulin dosage comprising a third oscillator for producing pulses, a counter for counting said pulses, a third fixed number switch for presetting the prescribed amount of injections, and a third digital comparator for comparing the output of said counter and said third switch, wherein said third fixed number switch is preset to permit delivery of an increased amount of insulin;

(d) a control unit for preventing repetitive injection of increased amounts of insulin; and

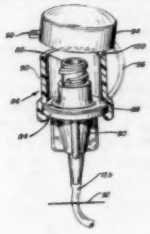
(e) means for preventing excess injection comprising a light source, a photosensor, counter for counting the number of light pulses, a fourth fixed number switch, and a fourth digital comparator.

4,417,890

ANTIBACTERIAL CLOSURE

T. Michael Dennehey, Arlington Heights, Ill., and Charles K. Peterson, Fontana, Wis., assignors to Baxter Travenol Laboratories, Inc., Deerfield, Ill.

Filed Aug. 17, 1981, Ser. No. 293,807
Int. Cl.³ A61M 3/00
U.S. Cl. 604—256 **17 Claims**



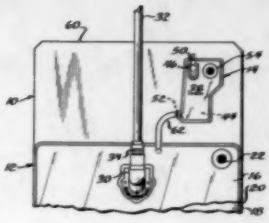
1. A closure system for a conduit carrying a connector at its end said connector defining a forward end segment which closure system comprises a flexible, tubular closure member positioned about said connector in sealing relation thereto, said closure member being proportioned to telescope over said connector and defining a groove adapted for snap-fit relation with a projecting flange on said connector and defining annular sealing means for providing a seal between the flexible, closure member and connector, said closure member being spaced from said forward end segment, said closure member carrying a removable cap for access to the system and adapted for enclosing antiseptic which is in contact with both the interior and exterior of said connector and wherein said closure member and removable cap are in a one-piece, molded elastomeric structure, means for limiting the forward penetration of said connector into said closure member, the inner diameter of the flexible structure telescoped around the connector being proportioned to define a space to permit the penetration of antiseptic about a portion of the exterior forward portion of said connector for improved antibacterial effect on the connector.

4,417,891

COLLECTION DEVICE WITH ANTISEPTIC LIQUID FOR BODY FLUIDS

James P. Cianci, Cary, Ill., assignor to The Kendall Company, Boston, Mass.

Filed Oct. 8, 1981, Ser. No. 309,625
Int. Cl.³ A61M 1/00
U.S. Cl. 604—317 **8 Claims**



1. A device for collecting urine from a patient comprising:

a container having flexible walls with inner and outer surfaces, a drainage catheter, a discharge tube and a chamber to receive urine;

a receptacle permanently secured to an outer surface of a wall of the container and having a cavity, a vent means through an upper portion of said cavity open to ambient atmosphere, the vent means including a bacteria filter, the receptacle cavity communicating with the container chamber directly through an opening means of approximately 0.030 inches in diameter, through a lower portion of said cavity, the internal diameter of the opening means and the surface tension of liquid contained within the cavity being so interrelated as to insure impeded passage of liquid from the cavity, through the opening means, to the container; and

an antiseptic agent means in liquid form in said cavity, the passage of said agent through said opening means from the cavity to the chamber being facilitated by said vent means open to the ambient atmosphere, the antiseptic agent means in the container chamber minimizing the possibility of contamination to the patient's bladder caused by retrograde bacteria movement from the device to the patient through the drainage tube.

4,417,892

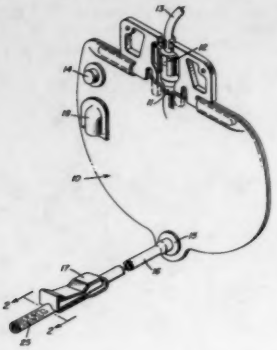
URINE DRAINAGE BAG OUTLET TUBE AND METHOD FOR ELIMINATING OR REDUCING MIGRATION OF BACTERIA

Charles E. Meisch, Hasbrouck Heights, N.J., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Dec. 31, 1981, Ser. No. 336,289
Int. Cl.³ A61M 1/00
U.S. Cl. 604—323 **10 Claims**

1. An outlet for a urine drainage bag, comprising an elongated outlet tube secured to the bottom portion of the drainage bag, at least a portion of the interior of said tube having a hydrophilic coating means thereon, a normally totally sealed

frangible ampule containing an antimicrobial substance received in said outlet tube, the antimicrobial substance being



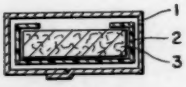
absorbed by said coating means on the tube interior when the frangible ampule seal is broken.

4,417,893

SANITARY NAPKIN

Hiroshi Mizutani, and Yoshimi Tsuchiya, both of Yachiyo, Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

Filed Jun. 8, 1978, Ser. No. 913,880
Claims priority, application Japan, Jun. 17, 1977, 52-79368
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—366 **7 Claims**



1. In a sanitary napkin for menstrual discharges, comprising an absorbent core, a liquid-impervious layer covering the bottom, sides and the edge portion of the top surface of the absorbent core and a non-woven fabric covering the remainder of the top surface of the absorbent core, the improvement which comprises:

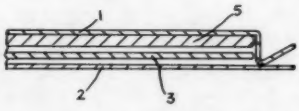
said non-woven fabric consists essentially of a unitary laminate of an inner layer disposed adjacent to said absorbent core and an outer layer disposed on the opposite side of said inner layer from said absorbent core, each of said inner and outer layers consisting essentially of a blend of hydrophilic fibers and heat-fusible hydrophobic fibers with said inner layer containing a higher proportion of hydrophilic fibers than said outer layer, one of said inner and outer layers consisting essentially of randomly oriented fibers in a fluffy bulky state, the other of said inner and outer layers consisting essentially of substantially uniformly oriented fibers and having a high longitudinal tensile strength, the hydrophobic fibers of said first and second layers being heat-fused to each other at the locations where they are in contact with each other to unite said first and second layers to each other and to maintain the structural integrity of said first and second layers.

4,417,894

TOWELSHEET DISPOSABLE DIAPER

Kenneth E. Norris, 61352 Tombstone Dr., Montrose, Colo. 81401

Filed Mar. 11, 1982, Ser. No. 357,303
Int. Cl.³ A61F *13/16*
U.S. Cl. 604—385 **4 Claims**



1. In an integral disposable diaper having a backsheet and an absorbent body superposed on and associated with the backsheet, an improvement, comprising:

a towelsheet, which is fastened to the diaper at the top area of the diaper, and which is removably fastened at the bottom area of the diaper such that when unfastened forms a towel, integral with the diaper, for cleaning a messy child, in which the towelsheet is of moisture absorbent material and is sandwiched between the backsheet and the absorbent body, with a substantial portion of the towelsheet extending over the backsheet.

4,417,895

TREATMENT OF TEXTILES WITH ANTIMICROBIAL AGENTS

Manfred Hennemann, Hilden; Hans Andree, Leichlingen; Rudolf Lehmann, Neuss; Harald Schnegelberger, Leichlingen, and Horst Bellinger, Düsseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Düsseldorf-Holthausen and Bayer Aktiengesellschaft, Leverkusen, both of, Fed. Rep. of Germany

Filed Dec. 21, 1981, Ser. No. 332,841

Claims priority, application Fed. Rep. of Germany, Jan. 9, 1981, 3100470

Int. Cl.[3] **D06L** *1/12;* **C11D** *3/48*

U.S. Cl. 8—137 **14 Claims**

1. A process for the antimicrobial treatment of textiles during washing and softening cycles using liquid textile washing agents based upon nonionic tensides and containing fabric-softening quaternary nitrogen compounds, wherein one or more antimicrobially active azole compounds are added to the textile washing agent or to the bath.

4,417,896

HAIR DYE COMPOSITIONS AND NEW COMPOUNDS USEFUL THEREIN

Andree Bugaut, Boulogne-sur-Seine, and Patrick Andrillon, Aulnay-sous-Bois, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Continuation of Ser. No. 682,798, May 3, 1976, Pat. No. 4,337,061, which is a continuation-in-part of Ser. No. 628,999, Nov. 5, 1975, abandoned. This application Apr. 6, 1982, Ser. No. 365,993

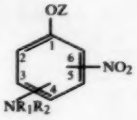
Claims priority, application France, Nov. 5, 1974, 74 36651; Apr. 3, 1976, 76 18985

The portion of the term of this patent subsequent to Jun. 29, 1999, has been disclaimed.

Int. Cl.[3] **A61K** *7/13;* **C07C** *93/14, 79/46, 103/29*

U.S. Cl. 8—414 **15 Claims**

1. A process for dyeing human hair comprising applying to washed and rinsed hair an effective amount of a hair dyeing composition comprising a water-alcohol solution, having a pH between 3 and 11.5, of 0.001 to 5% by weight of at least one compound of the formula



wherein

Z is lower alkyl having 1–6 carbon atoms and substituted by —OH, and

each of R_1 and R_2 is hydrogen or alkyl having 1 to 6 carbon atoms,

the —NO_2 substituent is in the 2, 3, 4, 5 or 6 position on the ring and the —NR_1R_2 substituent occupies any remaining position on the ring,

said alcohol being present in an amount from 20 to 75% by weight of the composition and being a lower alcohol having from 1 to 4 carbon atoms; said water-alcohol solution containing 1 to 3% by weight of a cosmetic resin selected from polyvinylpyrrolidone, a copolymer of crotonic acid and vinyl acetate, a copolymer of vinylpyrrolidone and vinyl acetate, a copolymer of methyl vinyl ether and maleic anhydride, a copolymer of the ethyl, isopropyl or butyl ester of maleic anhydride with methyl vinyl ether or a copolymer of maleic anhydride and butyl vinyl ether; setting the hair; and drying said hair.

4. A compound selected from the group consisting of

(4-nitro-2-β-hydroxyethylamino)phenoxyethanol,

(3-nitro-6-β-hydroxyethylamino)phenoxyethanol,

(3-nitro-6-carbamylmethylamino)phenoxyethanol,

(3-nitro-6-carboxymethylamino)phenoxyethanol,

(3-nitro-6-β-diethylaminoethylamino)phenoxyethanol,

(5-nitro-2-carbamylethylamino)phenoxyethanol,

(5-nitro-2-carboxyethylamino)phenoxyethanol and

(2-nitro-4-N,N-di-β-hydroxyethylamino)phenoxyethanol.

4,417,897

PROCESS FOR PREPARING BURN-OUT EFFECTS ON TEXTILE MATERIALS

Theo Stahl, Frankfurt am Main, and Ulrich Bühler, Schöneck, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Mar. 10, 1983, Ser. No. 473,784

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1982, 3209329

Int. Cl.[3] **D06P** *5/15;* **D06C** *23/02*

U.S. Cl. 8—464 **12 Claims**

1. In the process for preparing white or colored burn-out effects on textile materials containing hydrophobic fibers and cellulose fibers which comprises applying to the material a dyeing liquor or printing paste containing at least one disperse dyestuff for dyeing the hydrophobic fibers alone or mixed with dyestuff for dyeing the cellulose fibers, applying a burn-out agent which is a strong acid or an agent which splits off strong acid to the textile material in the form of a pattern, and then heat-treating the textile material at about 100° to 240° C. whereby the dyestuff is fixed and the burn-out effect is produced,

the improvement comprises said dyeing liquor or print paste contains at least one disperse dyestuff which is discharged by the burn-out agent.

4,417,898

CONTINUOUS DYEING PROCESS WHICH PROVIDES IMPROVED WETFASTNESS: ALKANDLAMINE-CONTAINING DYE LIQUOR AND AFTER-TREATMENT WITH FIXING AGENT

Rolf Hasler, Bienenweg 7, 4104 Oberwil, Switzerland, and Francis Palacin, 32 rue des Jonquilles, Riedisheim, France

Filed Sep. 8, 1982, Ser. No. 415,852

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1981, 3136032

Int. Cl.[3] **D06P** *3/62*

U.S. Cl. 8—543 **19 Claims**

1. A process for continuous dyeing a cellulosic fibrous substrate with a direct or reactive dye comprising the steps of

(a) applying to the substrate an aqueous dyeing liquor containing a direct or reactive dye and an alkanolamine, followed by

(b) fixing the dyeings, and finally

(c) after-treating the dyed substrate with a fixing agent comprising a precondensate or mixture of

either (A) the product of reacting a mono- or polyfunctional primary or secondary amine with cyanamide, dicyandiamide, guanidine or bisguanidine; or ammonia with cyanamide or dicyandiamide, said product (A) containing reactive hydrogen atoms bound to nitrogen,

or (B) a quaternary polyalkylene polyamine containing reactive hydroxy or amino groups

with (C) an N-methylol derivative of a urea, melamine, guanamine, triazinone, urone, carbamate or acid amide, optionally together

with (D) a catalyst for the crosslinking of N-methylol compounds of the type (C) above.

4,417,899

SELF-BURSTING COAL PELLETS AND A METHOD OF MAKING THEM

John D. Morris, Norman, Okla., and Asadollah Hayatdavoudi, Lafayette, La., assignors to The Board of Regents of The University of Oklahoma, Norman, Okla.

Filed Dec. 17, 1981, Ser. No. 331,803
Int. Cl.³ C10L 5/14, 5/32
U.S. Cl. 44—6 22 Claims

1. A pellet which is self-bursting upon the application of heat comprising:
coal particles;
water; and
water soluble binder binding the coal particles and entraining the water within the bound coal particles, the entrained water being convertible to a gaseous form upon the application of heat for facilitating the heat induced bursting of the pellet to free the coal particles for more efficient burning.

2. The pellet of claim 1 wherein the water soluble binder is further defined as being a hydrophilic organic polymer.

3. The pellet of claim 2 wherein the hydrophilic organic polymer is further defined as being a polyethylene glycol.

6. The pellet of claim 1 wherein the pellet is defined further to include: a water resistant coating substantially surrounding the outer peripheral surface of the pellet for rendering the pellet substantially resistant to water damage.

4,417,900

HIGH TEMPERATURE SOLID FIRE STARTER

Horst K. F. Barthel, Mozartstr. 3, D-7334 Süssen, Fed. Rep. of Germany

Filed Feb. 18, 1982, Ser. No. 349,942
Int. Cl.³ C10L 11/00, 11/04
U.S. Cl. 44—34 5 Claims

1. A high temperature solid fire starter comprising hexamethylenetetramine, magnesium powder, and oxygen producing chemical selected from the group consisting of tartaric acid, sodium nitrate and peroxide, and a wax binder.

3. The composition of claim 1 wherein the proportions are about 80 parts of magnesium powder, 120 parts of hexamethylenetetramine, 150 parts of the oxygen producing chemical, and 45 parts of the binder.

4,417,901

MIXED FUEL OF COAL AND OIL

Takashi Ando, and Naoki Oka, both of Sodegaura, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Apr. 28, 1982, Ser. No. 372,700
Claims priority, application Japan, May 8, 1981, 56-68182
Int. Cl.³ C10L 1/32
U.S. Cl. 44—51 11 Claims

1. A mixed fuel of coal dispersed in oil which comprises from 40 to 60 percent by weight of finely ground coal and from 60 to 40 percent by weight of a hydrocarbon oil, said finely ground coal being a mixture of (A) coal grains having a median diameter of 10 microns or less and (B) coal grains having a median diameter of from 15 to 42 microns in a ratio A/B of from 8/2 to 1/9; and the absolute value of the difference between the median diameter and the modal diameter of the coal grains in said mixture being at least 2 microns.

4,417,902

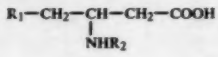
PROCESS FOR MAKING AND COMPOSITION OF LOW VISCOSITY COAL-WATER SLURRIES

Farrokh Yaghmaie, Wappingers Falls, and Ronald J. McKeon, Beacon, both of N.Y., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,855
Int. Cl.³ C10L 1/32
U.S. Cl. 44—51 16 Claims

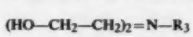
1. An aqueous slurry of a comminuted solid fuel having improved pumpability properties which comprises from about 50 to 70 weight percent of an 8 to 200 mesh comminuted fuel, from about 50 to 30 weight percent water and from about 0.01 to 5 weight percent of a compound selected from the group consisting of:

(a) a beta substituted carboxylic acid represented by the formula:



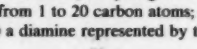
wherein R_1 and R_2 each represent hydrogen or a hydrocarbon radical containing from 1 to 20 carbon atoms provided that R_1 and R_2 together contain no more than 20 carbon atoms:

(b) a dialkanol alkyl amine represented by the formula



wherein R_3 is hydrogen or a hydrocarbon chain having from 1 to 20 carbon atoms; and

(c) a diamine represented by the formula



wherein R_4 is a divalent hydrocarbon radical having from 2 to 20 carbon atoms and R_5 and R_6 each represent a hydrocarbon radical having from 2 to 20 carbon atoms with the proviso that the sum of the carbon atoms in R_4, R_5 and R_6 does not exceed 24.

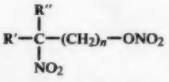
4,417,903

DIESEL FUEL COMPOSITION

James B. Hinkamp, Birmingham, Mich., assignor to Ethyl Corporation, Richmond, Va.

Filed Oct. 15, 1982, Ser. No. 434,632
Int. Cl.³ C10L 1/22
U.S. Cl. 44—53 7 Claims

1. Diesel fuel selected from the group consisting of liquid hydrocarbons of the diesel boiling range, alcohols, and mixtures thereof containing a cetane increasing amount of a primary nitrate ester having the structure



wherein R′ is an alkyl group containing 1–20 carbon atoms, R″ is selected from the group consisting of hydrogen and alkyl groups containing 1–20 carbon atoms and n is an integer from 1 to 4.

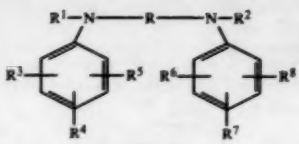
4,417,904

N,N′-DIALKYL-N,N′-DIPHENYL ALKYLENE DIAMINE DERIVATIVES AS ANTIKNOCK AGENTS

Lyle D. Burns, and Robert M. Parlman, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 16, 1981, Ser. No. 331,422
Int. Cl.³ C10L 1/22
U.S. Cl. 44—72 11 Claims

1. A fuel composition having antiknock characteristics containing at least one compound of the formula:



wherein R is hydrocarbyl; R^1 and R^2 are independently selected from alkyl groups having from 1 to about 7 carbon atoms; and R^3, R^4, R^5, R^6, R^7 and R^8 are independently hydrogen or hydrocarbon groups.

4,417,905

GAS MAKING

Reginald G. S. Banks, and Alan Williams, both of Solihull, England, assignors to British Gas Corporation, London, England

Division of Ser. No. 49,601, Jun. 18, 1979, Pat. No. 4,250,060, which is a continuation of Ser. No. 930,815, Aug. 3, 1978, abandoned, which is a division of Ser. No. 704,410, Jul. 12, 1976, Pat. No. 4,105,591. This application Jul. 30, 1980, Ser. No. 173,718

Claims priority, application United Kingdom, Sep. 29, 1975, 39724/75

Int. Cl.³ C01B *2/14*

U.S. Cl. 48—214 A **15 Claims**

1. A process for the production of methane-containing gases which comprises

reducing a catalyst precursor to produce a catalyst which is resistant to deactivation by polymer formation or by sintering and is therefore advantageously suitable for reforming hydrocarbons with steam at high pressures to produce methane-containing gases, said catalyst precursor consisting essentially of a calcined mixture of nickel, alumina, sodium and potassium, said catalyst precursor having been formed by co-precipitation from water solution utilizing sodium or potassium precipitants in the essential absence of chemical species having a deleterious effect upon the performance of the catalyst, wherein the nickel content in the catalyst precursor ranges from 50 to 65% by weight of the total weight of the catalyst precursor and wherein

(1) the total combined weight of sodium and potassium does not exceed 0.011 gm atoms/100 gm of catalyst precursor,

(2) at combined sodium and potassium contents of up to 0.05% by weight of the catalyst precursor, the water loss is not more than 11.2, and

(3) the ratio of sodium to potassium, expressed as a gram atom percentage, is 30-10Na/70-90 K, and

passing a vapor of a hydrocarbon feedstock having a boiling point of not greater than 350° C. and steam over said catalyst, said vapor being at an elevated pressure and said catalyst having an inlet temperature of from 350° C. to 550° C. and an exit temperature of at least 450° C.

4,417,906

PROCESS FOR PRODUCTION OF SILICON CARBIDE COMPOSITE

John M. Ohno, Plymouth, Mich., assignor to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 167,196, Jul. 9, 1980. This application Oct. 20, 1981, Ser. No. 312,987

Int. Cl.³ B24D *3/02*

U.S. Cl. 51—307 **14 Claims**

1. A process for preparing a bonded composite comprising:

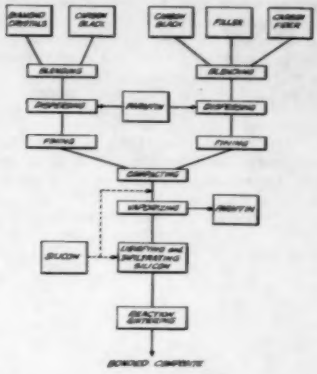
(a) blending diamond crystals and carbon black to permit an even coating of said diamond crystal surfaces;

(b) forming a first dispersion of said blended diamond crystals and carbon black in paraffin;

(c) forming a second dispersion of carbon fiber, carbon black and filler in paraffin;

(d) compacting said dispersions together to produce an integral bilayer composite;

(e) subjecting said composite to a vacuum for a period of time at a temperature sufficient to vaporize essentially all of said paraffin;



(f) placing said composite in direct contact with elemental silicon;

(g) heating said silicon to cause liquification and infiltration into both layers of said composite; and

(h) sintering the composite and infiltrated silicon under conditions sufficient to produce a β-silicon carbide binder uniting said composite.

4,417,907

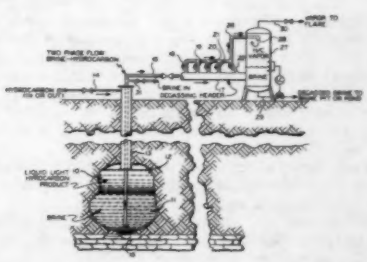
DEGASSING METHOD AND APPARATUS

Delouis J. Fontenot, Borger, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 16, 1981, Ser. No. 302,918

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—38 **11 Claims**



1. A method comprising:

passing a two phase flow comprising gaseous bubbles and liquid through a first conduit which is open communication with a gas-liquid disengaging zone; wherein said gas-liquid disengaging zone contains liquid and has a gas space; wherein the interface between said liquid contained in said disengaging zone and said gas space defines a liquid level;

passing liquid from said first conduit into said disengaging zone at a location below said liquid level;

allowing gaseous bubbles to break up and escape from said first conduit by passing said gaseous bubbles through at

least two taps in open communication with said first conduit; wherein said at least two taps are in open communication with said first conduit at locations lower than said liquid level; wherein at least a portion of each of said at least two taps is higher than said liquid level;

allowing gaseous bubbles escaping from said first conduit through said at least two taps to enter a second conduit in open communication with said gas space in said disengaging zone; wherein said taps are sufficiently disposed from a horizontal orientation to allow gaseous bubbles to escape from said first conduit to said second conduit;

passing gaseous bubbles from said second conduit into said gas space in said disengaging zone; and

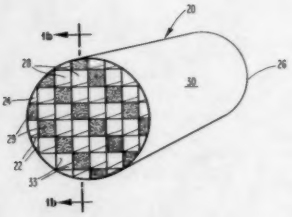
removing gas from said disengaging zone.

4,417,908

HONEYCOMB FILTER AND METHOD OF MAKING IT

Wayne H. Pitcher, Jr., Big Flats, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Feb. 22, 1982, Ser. No. 350,995
Int. Cl.³ B01D *39/20*
U.S. Cl. 55—523 **19 Claims**



1. A filter for removing all or substantially all of the solid particulates in fluids passed through the filter comprising:

a multiplicity of interconnected thin porous walls defining inlet end faces and outlet end faces of the filter and a multiplicity of cells, each cell extending through the filter from at least one of the inlet and outlet end faces and having a surface area defined by surfaces of the thin walls exposed within the cell,

the thin walls containing interconnected open porosity of a volume and size sufficient to enable the fluid to flow across the narrow dimension of the thin walls between adjoining cells and through the longer dimensions of the thin walls between adjoining or neighboring cells and to restrain at least a significant portion of the solid particulates from passing either across or through any of the thin walls,

an outlet group of cells, each cell of the outlet group being open at a said outlet face and closed where adjoining any said inlet end face,

an inlet group of cells, each cell of the inlet group being open at a said inlet end face and closed where adjoining any said outlet end face, and

the collective thin wall surface area of the inlet group of cells being significantly greater than the collective thin wall surface area of the outlet group of cells.

16. In the method of fabricating a filter for removing solid particulates from fluid streams comprising the steps of providing a honeycomb structure formed from a matrix of thin, intersecting porous walls which define a pair of open end faces and a multiplicity of hollow cells extending in a substantially mutually parallel fashion, closing a first group of cells near their end portions at one end face and the remaining cells near their end portion at the remaining end face, the interconnected open porosity of the thin walls being of volume and size sufficient to enable fluid flowing into the first group of cells to flow completely across the narrow dimensions of the thin walls into adjoining cells of the second group and through the thin walls in their longer dimension to adjoining or neighboring cells of the second group and preventing at least a significant portion of the solid particulates from passing completely across or through the walls in any of their dimensions, the improvement comprising the step of:

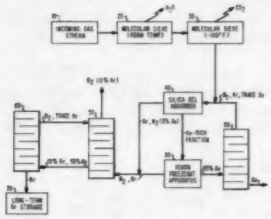
further closing said cells to provide substantially greater collective thin wall surface area to the inlet group of cells than the collective thin wall surface area provided by the outlet group of cells.

4,417,909

GAS SEPARATION PROCESS

William R. Weltmer, Jr., Murray Hill, N.J., assignor to Airco, Inc., Montvale, N.J.

Filed Dec. 4, 1978, Ser. No. 966,446
Int. Cl.³ F25J *3/06*
U.S. Cl. 62—12 **2 Claims**



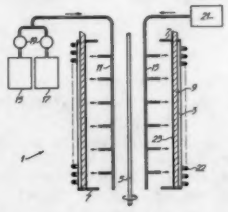
1. A method for separating xenon from a mixture consisting essentially of xenon, argon, nitrogen and krypton, comprising the steps of: (a) admitting a fixed quantity of said mixture into a chamber; (b) at least partially cooling the walls of said chamber by heat exchange with liquid nitrogen; (b) allowing sufficient time for essentially equilibrium conditions to be reached, at which the argon and nitrogen components of said mixture are liquefied and the xenon and krypton components are solidified; (c) removing the nitrogen and argon without removal of krypton and xenon; (d) thereafter warming the chamber to a degree such that the krypton and xenon are reliquefied; and (e) removing the reliquefied krypton and xenon from said chamber.

4,417,910

PROCESS FOR MANUFACTURING A GLASS TUBE COMPRISING AT LEAST ONE DOPED SILICA LAYER

Michel Passaret, 20, rue Pierre Le Goffic, 22700 Perros Guirec, France

Filed Sep. 14, 1981, Ser. No. 302,145
Claims priority, application France, Sep. 17, 1980, 80 19986
Int. Cl.³ C03B *37/01, 19/06*
U.S. Cl. 65—3.12 **17 Claims**



1. A process for manufacturing a glass tube comprising at least one doped layer which process comprises the following steps:

atomizing onto the inside surface of a cylindrical mandrel rotated in a centrifuge, a gelable liquid containing an

alkoxysilane so as to form on the mandrel, a layer of said gelable liquid;

simultaneously atomizing on said layer a hydrolyzing agent to convert the layer of gelable liquid to a layer of gel; with the hydrolyzing agent and/or the gelable liquid containing a doping element;

withdrawing the mandrel from the centrifuge, with the layer of gel remaining in the centrifuge; and

submitting the layer of gel thus obtained to at least one thermal treatment, to dry and thermally consolidate the layer into a tube of doped vitrious silica.

4,417,911

MANUFACTURE OF OPTICAL FIBRE PREFORMS

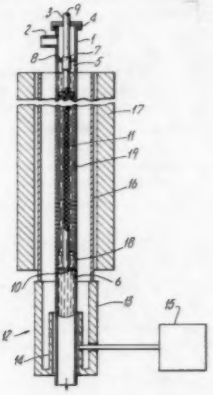
Steven L. Cundy, Stanmore; Ronald A. Evans, London; Oliver S. Johnson, Northfleet; John S. McCormack, Wembley, and Bruce A. Nichols, London, all of England, assignors to Associated Electrical Industries Limited, London, England

Filed Feb. 23, 1982, Ser. No. 351,483

Claims priority, application United Kingdom, Feb. 27, 1981, 8106311

Int. Cl.³ C03B *19/00, 37/025*

U.S. Cl. 65—3.12 **6 Claims**



1. A method of manufacturing a glass optical fibre preform in which a coating composed essentially of oxide material is formed on the interior surface of a glass substrate tube by causing a chemical reaction to take place between oxygen and the vapour of at least one compound capable of reacting with oxygen to produce the desired coating material, wherein an inner tube which has a multiplicity of perforations through its wall is supported coaxially within the substrate tube, an annular space being provided between the perforated tube and the substrate tube, and a gaseous mixture consisting of oxygen and each said vapour, and optionally an additional carrier gas, is caused to flow into the said annular space, at least each said vapour being introduced into the annular space by being passed into the inner tube so as to emerge through the perforations into said space, the gas pressure in the inner tube being maintained higher than that in the said annular space so as to cause gas to flow through the perforations into said annular space, while at least a major part of the length of the substrate tube is maintained at an elevated temperature, and a chemical reaction is caused to take place throughout the said annular space by generating energy in said space, whereby a coating of solid material resulting from the said reaction is formed simultaneously on the whole of the interior surface of the heated length of the substrate tube, while residual gases and gaseous reaction products are withdrawn from said annular space, the perforations in the said perforated inner tube being varied in respect of at least one of the features consisting of diameter, number and distribution along the length of the tube as required to control the rates of gas flow through the perforations and deposition of the coating so that the coating formed on the interior surface of the substrate tube is of uniform thickness both radially and longitudinally.

4,417,912

METHOD OF PRODUCING CRYSTALLIZED GLASS FROM PHOSPHATE GLASS

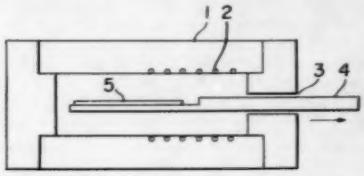
Yoshihiro Abe, 2-4-43, Taihoh, Atsuta-ku, Nagoya-shi, Aichi-ken, Japan, assignor to Ashai Glass Company Ltd., Tokyo and Yoshihiro Abe, Nagoya, both of, Japan

Filed Oct. 28, 1981, Ser. No. 315,864

Claims priority, application Japan, Oct. 28, 1980, 55/150114

Int. Cl.³ C03B *32/00*

U.S. Cl. 65—33 **3 Claims**



1. A method of producing crystallized glass from meta phosphate glass which comprises fabricating metaphosphate glass in an elongate shape and transferring the glass to a furnace having inside a temperature gradient ranging from the softening point to the glass transformation point of the glass and positioning the glass so that the longitudinal direction of the glass is parallel to the direction of the temperature gradient, and moving the glass so-positioned in the furnace, relative to the furnace, in the direction of the increase of temperature gradient so that a crystallized metaphosphate glass with its crystals oriented in its longitudinal direction is obtained.

4,417,913

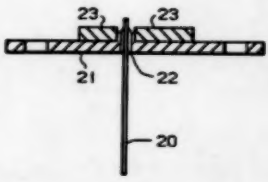
LOWER TEMPERATURE GLASS AND HERMETIC SEAL MEANS AND METHOD

Earl K. Davis, Tempe; Rafael Landron, Phoenix, and Scot W. Taylor, Tempe, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 315,102, Oct. 26, 1981, Pat. No. 4,349,635. This application May 26, 1982, Ser. No. 382,057

Int. Cl.³ C03C *29/00, 7/02*

U.S. Cl. 65—59.1 **10 Claims**



1. In a method for making an electrical device having at least one electrically conductive member hermetically sealed to another member by a sealing material, the improvement comprising:

utilizing a lead-free glass plus alumina ceramic sealing material consisting essentially of the following ingredients by weight percent in the range of:

Ingredients	Composition Range
SiO_2	34–50
Al_2O_3	2–25
K_2O	2–6
Na_2O	4–9
Li_2O	2–6
CaO	0–4
ZnO	4–12
BaO	1–5
TiO_2	2–6
B_2O_3	11–21

6. An enclosure for an electrical device comprising:

a portion of said enclosure containing at least one aperture;

at least one electrically conductive lead positioned within said aperture; and

means within said aperture and surrounding said at least one lead for sealing said aperture, said means comprising a lead-free glass plus alumina ceramic sealing material consisting essentially of the following ingredients by weight percent in the range:

Ingredients	Composition Range
SiO_2	34–50
Al_2O_3	2–25
K_2O	2–6
Na_2O	4–9
Li_2O	2–6
CaO	0–4
ZnO	4–12
BaO	1–5
TiO_2	2–6
B_2O_3	11–21

4,417,914

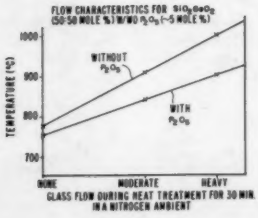
METHOD FOR FORMING A LOW TEMPERATURE BINARY GLASS

William I. Lehrer, Los Altos, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Continuation-in-part of Ser. No. 243,989, Mar. 16, 1981, abandoned. This application Mar. 26, 1982, Ser. No. 362,333

Int. Cl.³ C03B *29/00, 32/00*

U.S. Cl. 65—60.53 **8 Claims**



1. The method of forming and smoothing a thin glass film, comprising:

(a) reacting a gaseous mixture of germane and silane with oxygen at a reaction temperature of from 350°–500° C. to form a mixed germanium oxide/silicon oxide glass vapor;

(b) depositing said glass mixture vapor on a semiconductor substrate as a film of less than about 5 microns in thickness, said germanium oxide being about 50 mole percent of the germanium oxide/silicon oxide glass mixture; and

(c) reflowing the resulting glass film at a temperature range of approximately 700° C. to 900° C. to smooth the surface topography of the film.

4,417,915

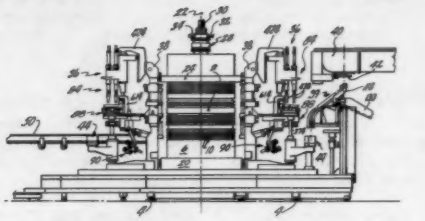
GLASSWARE FORMING APPARATUS

Francis A. Dahms, Tariffville, Conn., assignor to Emhart Industries, Inc., Farmington, Conn.

Division of Ser. No. 179,381, Aug. 18, 1980, Pat. No. 4,339,264. This application May 7, 1982, Ser. No. 375,834

Int. Cl.³ C03B *7/16*

U.S. Cl. 65—159 **5 Claims**



1. A delivery system for delivering gobs of glass from a plurality of feeder orifices to a plurality of sets of a plurality of blank molds, said sets being rotated about a central axis with each said blank mold of each set being positioned a different radial distance from said central axis, said delivery system including a plurality of individual gob guiding units, each one feeding a gob from one orifice to one of the blank molds in a set of blank molds, and means mounting said gob guiding units so that the upper ends thereof are substantially under the orifice and the other ends are positioned over the blank molds as each set of blank molds are rotated underneath and the other end of each unit is moved at a different relative tangential velocity to match the different relative tangential velocity of its associated blank mold.

4,417,916

ENCAPSULATION BY INTERFACIAL POLYCONDENSATION

George B. Beestman, Creve Coeur, and John M. Deming, Hazelwood, both of Mo., assignors to Monsanto Company, St. Louis, Mo.

Continuation-in-part of Ser. No. 23,566, Mar. 26, 1979, Pat. No. 4,280,833. This application Jul. 22, 1981, Ser. No. 286,092

The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.

Int. Cl.³ A01N *43/48, 43/64, 37/18;* **B01J** *13/02*

U.S. Cl. 71—93 **40 Claims**

21. A composition consisting essentially of a mixture of water and microcapsules containing a water-immiscible material, said mixture being produced by a process which comprises the steps of:

(a) providing an aqueous phase containing an emulsifier selected from the group consisting of sodium, potassium, magnesium, calcium or ammonium salts of lignin sulfonate;

(b) dispersing in said aqueous phase, a water-immiscible phase consisting essentially of polymethylene polyphenylisocyanate dissolved in said water-immiscible material, to form a dispersion of water-immiscible phase droplets throughout the aqueous phase;

(c) adding, with agitation, to said dispersion a polyfunctional amine, whereby said amine reacts with polymethylene polyphenylisocyanate to form a polyurea shell wall about said water-immiscible material;

wherein the concentration of said water-immiscible material is from about 480 grams to about 600 grams per liter of said composition, wherein the concentration of polymethylene polyphenylisocyanate is from about 3.5% to about 15.0% by weight of said water-immiscible material, wherein the concentration of said polyfunctional amine is from about 1.5% to about 9.0% by weight of said water-immiscible material, and

wherein the concentration of said emulsifier is from about ¼% to about 15% by weight of said water-immiscible material; and wherein said water-immiscible material is selected from the group consisting of 2-chloro-2′,6′-diethyl-N-(methoxymethyl)-acetanilide, N-(butoxymethyl)-2-chloro-2′,6′-diethylacetanilide, 2-chloro-N-isopropyl acetanilide, α-chloro-2′-ethyl-6′-methyl-N-(1-methyl-2-methoxyethyl)acetanilide, α-chloro-N-(2-methoxy-6-methylphenyl)-N-(1-methylethoxymethyl)acetamide, α-chloro-N-methyl-N-[2-methyl-6-(3-methylbutoxy)phenyl]-acetamide, α-chloro-N-[2-methyl-6-(2-methylpropoxy)phenyl]-N-(propoxymethyl)acetamide, N-[(acetylamino)methyl]-α-chloro-N-(2,6-diethylphenyl) acetamide, α-chloro-N-methyl-N-(2-methyl-6-propoxyphenyl)acetamide, N-(2-butoxy-6-methylphenyl)-α-chloro-N-methylacetamide, isobutyl ester of (2,4-dichlorophenoxy)acetic acid, 2-chloro-N-(ethoxymethyl)-6′-ethyl-o-acetatoluidide, 1-(1-cyclohexen-1-yl)-3-(2-fluorophenyl)-1-methyl urea, S-2,3,3-trichloroallyl-diisopropylthiocarbamate, S-2,3-dichloroallyl-diisopropylthiocarbamate,α,α,α-trifluoro-2,6-dinitro-N,N-dipropyl-p-toluidine, 2-chloro-4-ethylamino-6-isopropylamino-1,3,5-triazine, 2-chloro-4,6-bis(ethylamino)-1,3,5-triazine, 2-chloro-4,6-bis-(isopropylamino)-1,3,5-triazine, 4-amino-6-(1,1-dimethylethyl)-3-(methylthio)-1,2,4-triazin-5(4H)-one, N′-(3,4-dichlorophenyl)-N-methoxy-N-methylurea, 2-chloro-N-(ethoxymethyl)-N-[2-methyl-6-(trifluoromethyl)phenyl]acetamide, α-chloro-N-(ethoxymethyl)-N-[2-ethyl-6-(trifluoromethyl)-phenyl]acetamide,methyl and ethyl parathion, ethyl 2-chloro-4-(trifluoromethyl)-5-thiazolecarboxylate, benzyl, 2-chloro-4-(trifluoromethyl)-5-thiazolecarboxylate and mixtures thereof.

4,417,917

HERBICIDAL SULFONAMIDES

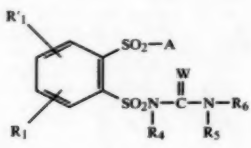
George Levitt, Wilmington, and Richard F. Sauers, Hockessin, both of Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 152,022, May 30, 1980, Pat. No. 4,310,346, which is a continuation-in-part of Ser. No. 130,342, Mar. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 59,153, Jul. 20, 1979, abandoned. This application Oct. 20, 1981, Ser. No. 313,348

Int. Cl.[3] **C07D** *251/46;* **A01N** *43/66*

U.S. Cl. 71—93 **30 Claims**

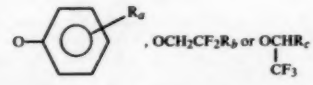
1. A compound of the formula



I

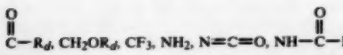
wherein

A is NR_2R_3, OCH_2CCl_3, OCH_2CBr_3 or



where R_a is H, Cl, CH_3, OCH_3 or NO_2 and R_b is H, F or C_1–C_2 alkyl with 0–5F and R_c is CH_3 or CF_3;

R_1 is H, Cl, Br, F, C_1–C_3 alkyl, NO_2, OCH_3,



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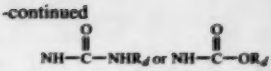
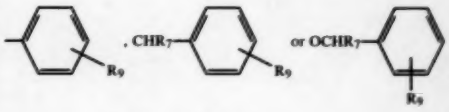


where R_d is C_1–C_3 alkyl, or R_1 is $N(CH_3)_2$, CN, $CH_2S(O)_nCH_3$ or $S(O)_nCH_3$, where n is 0, 1 or 2;

R_1' is H, Cl, F, Br, CH_3 or OCH_3;

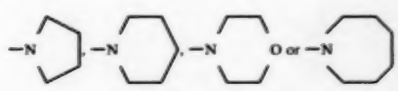
R_2 is H, C_1–C_6 alkyl, C_3–C_4 alkenyl, C_3–C_6 cycloalkyl, C_4–C_7 cycloalkylalkyl, C_5–C_6 cycloalkenyl, C_3–C_5 alkynyl, C_3–C_6 cycloalkyl substituted with 1–2 CH_3 groups, CF_2CF_2H, CF_2CHFCl, CF_2CHFBr, CF_2CHFCF_3, $C(CH_3)_2CN$, $(CH_2)_mCN$, where m is 1 or 2, $CH_2CH_2OCH_3$, $CH_2CH(CH_3)OCH_3$, $(CH_2)_3OCH_3$, $CHR_7CO_2R_8$ or $CHR_7CON(R_8)_2$, where R_7 is H or CH_3 and R_8 is C_1–C_3 alkyl, OCH_3,



where R_9 is H, CH_3, Cl, Br or F;

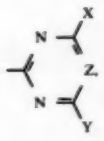
R_3 is C_1–C_4 alkyl, C_3–C_4 alkenyl, $CH_2CH_2OCH_3$, $CH_2CH(CH)_3OCH_3$, CH_2CF_3, or $(CH_2)_mCN$, where m is 1 or 2, or $CHR_7CO_2R_8$,

N_2R_3 taken together are



R_4 and R_5 are independently H or CH_3, but R_4 and R_5 cannot both be CH_3;

R_6 is



wherein

X is H, CH_3, CH_3O or CH_3CH_2O; Y is Cl, Br, H, C_1–C_3 alkyl, CF_3, $NHCH_3$, $N(CH_3)_2$, OCH_2CF_3, OCH_3, OC_2H_5, SCH_3, $O(CH_2)_pOR_{10}$, where p is 2 or 3 and R_{10} is CH_3 or C_2H_5, $CH_2CH_2OCH_3$, CH_2OCH_3, $CH_2OCH_2CH_3$, $OCHR_7CO_2R_{11}$, $OCCHR_7CON(R_8)_2$, CO_2R_{11} and $CH_2CO_2R_{11}$, where R_{11} is H or C_1–C_3 alkyl, CH_2CN, $NCH_3(CH_2CN)$, CH_2CH_2CN, CH_2Cl, N_3, $OCH_2CH{=}CH_2$ or $OCH_2C{\equiv}CH$;

Z is N; and

W is O or S;

provided that:

(1) when R_2 is OCH_3, R_3 is CH_3;

(2) when R_2 is CF_2CHFCl, CF_2CHFBr, CF_2CF_2H or CF_2CHFCF_3, then R_3 is C_1–C_4 alkyl;

and their agriculturally suitable salts.

27. A method for the control of undesirable vegetation comprising applying to the locus of such undesirable vegetation a herbicidally effective amount of a compound of claim 1.

4,417,918

HERBICIDAL α-[3-(2-HALO-4-TRIFLUOROMETHYLPHENOXY)-6-HALOPHENOXY]PROPIONIC ACID THIO ESTERS AND ACIDS

Otto Rohr, Therwil, Switzerland; Georg Pissiotas, Lörrach, Fed. Rep. of Germany; Beat Böhner, Binningen, and Kurt Burdeska, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

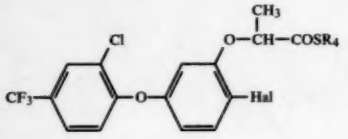
Division of Ser. No. 83,905, Oct. 11, 1979, Pat. No. 4,304,926, which is a continuation-in-part of Ser. No. 883,021, Mar. 3, 1978, abandoned. This application Aug. 28, 1981, Ser. No. 297,299

Claims priority, application Switzerland, Mar. 8, 1977, 2867/77; Jul. 4, 1977, 8182/77

Int. Cl.³ A01N *37/10*; **C07C** *153/023, 149/40, 149/43*

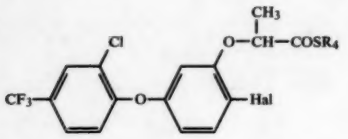
U.S. Cl. 71—100 **8 Claims**

1. A compound of the formula



in which Hal is chlorine or bromine and R_4 is hydrogen, phenyl or benzyl.

4. A method of selectively controlling weeds in crops of cultivated plants which comprises applying areas where said crops are grown or to be grown, a herbicidally effective amount of a compound of the formula



in which Hal is chlorine or bromine and R_4 is hydrogen or benzyl.

4,417,919

3-HALOALKOXY-4-NITRO-2'-CHLORO-4'-TRIFLUOROMETHYLDIPHENYL ETHERS AND HERBICIDAL USE THEREOF

Otto Rohr, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Feb. 10, 1982, Ser. No. 347,400

Claims priority, application Switzerland, Feb. 19, 1981, 1106/81

Int. Cl.³ A01N *31/00*; **C07C** *43/263*

U.S. Cl. 71—124 **6 Claims**

1. 3-Difluoromethoxy-4-nitro-2'-chloro-4'-trifluoromethyldiphenyl ether.

2. A herbicidal composition which contains, as active ingredient, the compound according to claim 1, together with an agriculturally suitable carrier therefor.

4,417,920

PROCESS FOR ELIMINATING METALLIC IMPURITIES FROM MAGNESIUM BY INJECTING A HALOGENATED DERIVATIVE OR BORON

Andre Mena, St. Jean-de-Maurienne; Jean-Michel Charriere, Creil, and Jean Desbrest, Barbazan, all of France, assignors to Societe Francaise d'Electrometallurgie Sofrem, Paris, France

Filed Nov. 2, 1982, Ser. No. 438,651

Claims priority, application France, Nov. 25, 1981, 81 22451

Int. Cl.³ C22B *26/22*

U.S. Cl. 75—63 **6 Claims**

1. A process for the purification of a magnesium melt having iron, silicon and/or manganese impurities therein, comprising:

injecting a halogenated boron derivative selected from the group consisting of BCl_3, BF_3, and their combination into or near the bottom of said melt, and

recovering magnesium from the melt purified thereby.

4,417,921

WELDED FERRITIC STAINLESS STEEL ARTICLE

Jack R. Maurer, Natrona Heights, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Nov. 17, 1981, Ser. No. 322,126

Int. Cl.³ C22C *38/20*

U.S. Cl. 75—125 **12 Claims**

1. A ferritic stainless steel consisting essentially of, in weight percent, up to 0.03% carbon, up to 0.03% nitrogen, and a total amount of carbon and nitrogen content of no more than 0.04%, from 11.50 to 13.50% chromium, up to 1.0% manganese, up to 1.0% silicon, up to 0.5% nickel, up to 0.15% copper, and a total amount of nickel and three times the copper of no more than 0.80%, at least one element from the group consisting of titanium and columbium in an amount from 0.1 and four times the total carbon and nitrogen up to 0.75%, and the balance essentially iron with usual steelmaking residuals, said steel characterized by low amounts of carbon, nitrogen, and copper for providing good fabricability suitable for integrally-finned tubing.

4,417,922

SINTERED HARD METALS

Fred W. Hall, Metallurg Group Industrial Development Office, 64 Fargate, Sheffield, South Yorkshire, S1 2HE, England, and Hans-Joachim Retelsdorf, Gesellschaft für Elektrometallurgie m.b.H., Zentrale Forschung, Postfach 2844, 8500 Nüremberg 1, Fed. Rep. of Germany

PCT No. PCT/GB80/00195, § 371 Date Jul. 20, 1981, § 102(e) Date Jul. 20, 1981, PCT Pub. No. WO81/01422, PCT Pub. Date May 28, 1981

PCT Filed Nov. 10, 1980, Ser. No. 285,189

Claims priority, application United Kingdom, Nov. 20, 1979, 7940140

Int. Cl.³ C22C *29/00, 1/10*

U.S. Cl. 75—236 **17 Claims**

1. A sintered hard metal which comprises at least one carbide of a metal selected from the groups IV to VI of the Periodic Table of the Elements, a binder comprising one or more metals or alloys of the iron group and a mixed crystal material prepared by subjecting a mixture comprising titanium, zirconium and hafnium carbides to heating at a temperature and for a time sufficient for the mixed crystal product to undergo spinodal decomposition upon cooling, the amount of mixed crystal material present in the hard metal being in the range from 1% to 30% by weight of the hard metal.

13. A process of manufacture of a sintered hard metal, in which a first mixture comprising titanium zirconium and hafnium carbides is heated under such conditions that the resultant first product contains titanium zirconium and hafnium carbides in mixed crystal form, a second mixture is formed from the first product in comminuted form and from at least one metal or alloy of the iron group, heating the second mixture under such conditions that the resultant second product

comprises a sintered hard metal containing said at least one metal or alloy of the iron group and titanium, zirconium and hafnium carbides in spinodally-decomposed mixed crystal form and at least one other hard metal material, the latter being incorporated with titanium carbide into at least one of said first and second mixtures.

4,417,923

SOLID REFINING AGENTS FOR THE REFINING OF ALUMINUM AND ALLOYS THEREOF AND METHOD OF PREPARING SAID AGENTS

Ivan Beranek; Josef Kyral; Miroslav Uhlir, and Ivan Zlesak, all of Usti nad Labem, Czechoslovakia, assignors to Spolek pro chemickou a hutni vyrobu, narodni podnik, Usti nad Labem, Czechoslovakia

Filed Sep. 13, 1982, Ser. No. 417,212

Claims priority, application Czechoslovakia, Sep. 14, 1981, 6752-81

Int. Cl.³ C22B *21/06*

U.S. Cl. 75—257 **4 Claims**

1. A method of preparing solid refining agents in the form of discrete bodies for the refinement of aluminum and alloys thereof by adding such bodies to a melt of such metals, said method comprising mixing of completely chlorinated hydrocarbon and at least one alkali metal chloride selected from the group consisting of sodium chloride and potassium chloride and exposing this mixture to pressure, said chlorinated hydrocarbon in the mixture with an alkaline chloride being hexachlorbenzene and the pressing being performed by exerting a pressure from 20 to 110 MPa to an amount of 0.05 to 10 kg of the mixture.

4,417,924

STEELMAKING ADDITIVE COMPOSITION

John W. Schwer, 1349 Azalea Dr., Munster, Ind. 46321

Filed Sep. 30, 1982, Ser. No. 431,540

Int. Cl.³ C22B *9/10*

U.S. Cl. 75—257 **18 Claims**

1. A steelmaking additive composition consisting essentially of from about 25 to 50 wt% lime and about 75 to 50 wt% calcium aluminate.

4,417,925

CERAMIC FIBER REFRACTORY MIXTURE

Carl J. Cherry, King of Prussia, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 16, 1982, Ser. No. 368,798

Int. Cl.³ C04B *9/04*

U.S. Cl. 106—85 **12 Claims**

1. A dry, lightweight refractory mixture, which becomes plasticized upon the addition of water to yield a moldable, air-setting, insulating refractory composition, comprising:

a. from about 35 to about 70% by weight ceramic fiber;

b. from about 10.5 to about 40% by weight setting agent for providing an air-setting mechanism whereby the refractory composition will harden at ambient temperature upon the addition of water;

c. from about 5 to about 20% by weight of dry, watersoluble, powdered resin binder from the group consisting of solid resin binders prepared from urea formaldehyde, melamine formaldehyde, and mixtures thereof;

d. from about 0.3 to about 2% by weight of dry, watersoluble, nonionic, powdered organic polymer plasticizing agent for gelling and imparting cohesiveness to the plasticized composition.

4,417,926

METHOD FOR CLEANING AND DISINFECTING USED PLASTIC PETRI DISHES

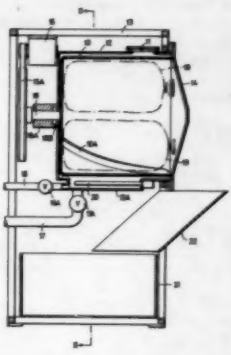
Lars B. Edebo, Linköping; Harald G. Swede, Malmö, and Nils-Erik Tornqvist, Sigtuna, all of Sweden, assignors to Assab Medicin AB, Sundbyberg, Sweden

Filed Oct. 20, 1981, Ser. No. 313,349

Claims priority, application Sweden, Oct. 20, 1980, 8007348

Int. Cl.³ B08B *3/06*; A61L *2/00*

U.S. Cl. 134—17 **6 Claims**



1. A method for rendering harmless and cleaning of agar plates, the plates comprising a plastic Petri dish containing an agar-based culture substrate, said method comprising the steps of:

(a) loading batches of agar plates respectively into bag-like containers at least partly comprising a sheet material which is solid and substantially insoluble in water at room temperature but soluble in water at a predetermined temperature;

(b) placing the loaded bag-like containers containing the batches of agar plates in a heating chamber;

(c) closing the heating chamber in a bacterium tight manner;

(d) feeding water into the heating chamber, the water having said predetermined temperature of at least about 80° C. but not more than 98° C. in the heating chamber, to dissolve said containers and for contacting the agar plates;

(e) continuing said contacting for a predetermined period of time sufficient for disinfection of the agar plates while maintaining the heating chamber substantially at atmospheric pressure;

(f) rinsing the agar plates with water; and

(g) draining off the rinsing water through the bottom of the heating chamber, together with material washed out of the agar plates.

4,417,927

STEEL NITRIDING METHOD AND APPARATUS

Robert L. Fullman, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 29, 1982, Ser. No. 363,330

Int. Cl.³ C21D *1/48*

U.S. Cl. 148—16.6 **11 Claims**

1. In the process of nitriding, wherein influent gas flow containing ammonia continuously enters a nitriding chamber to flowingly contact at least one steel body at elevated temperature therein whereby ammonia is caused to dissociate and effluent gas continuously exits said chamber; the method for controlling the nitriding process in said chamber comprising the steps of:

(1) measuring the influent gas flow rate,

(2) measuring the effluent gas flow rate,

(3) measuring the current rate of dissociation of ammonia in

said chamber based upon the difference between said flow rates and

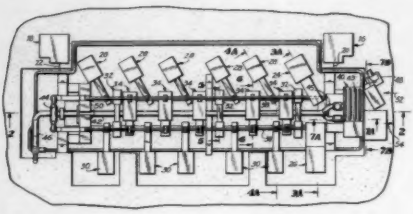
(4) changing (x) the rate of influent gas flow, (y) the concentration of ammonia in the influent gas flow or (z) both (x) and (y) as required to adjust the mole fraction of ammonia to the value to be maintained in said chamber.

4,417,928

INSIDE-OUTSIDE TUBE QUENCHING METHOD

Christian H. Heine, Jr., Longview; Robert W. McGaw, Irving; W. Edwin Wetzel, Jr., Daingerfield, all of Tex., and Joseph Ziegler, Apollo, Pa., assignors to Lone Star Steel Company, Dallas, Tex.

Filed Feb. 26, 1982, Ser. No. 352,945
Int. Cl.³ C21D 9/08
U.S. Cl. 148—144 8 Claims



1. A method for quenching steel tubulars during horizontal axial movement of the tubular comprising heating the tubular in a furnace to a temperature suitable for quenching, conveying the tubular from the furnace in an axial direction through an outside quench head and over an inside quench head mounted on a mandrel longer than the tubular and containing a supply of quenching water; supporting the mandrel at discrete points along its length eccentrically in an oscillatible frame, conveying the tubular over the mandrel and simultaneously quenching the tubular by directing quenching water from the outside quench head against the outer surface of the tubular and from the inside quench head against the inner surface of the tubular, sequentially removing the mandrel supports as the tubular moves along the mandrel, sensing the position of the tubular when the trailing end of the tubular passes the outside and inside quenching heads; discontinuing the flow of quenching water from the inside and outside quenching heads; clamping the quenched tubular eccentrically in the oscillatible frame, disengaging the tubular conveying means, oscillating the frame with the clamped quenched tubular about its axis through an angle of 180°, engaging the tubular conveying means with the tubular, unclamping the quenched tubular from the oscillatible frame, and conveying the quenched tubular back over the mandrel and the inside quenching head.

4,417,929

SPECIAL BRASS WITH DEZINCIFICATION CORROSION RESISTANCE

Hisao Tomaru, Yamanashi, Japan, assignor to Kitz Corporation, Tokyo, Japan

Filed Sep. 8, 1981, Ser. No. 300,287
Claims priority, application Japan, Sep. 11, 1980, 55-125342
Int. Cl.³ C22C 9/04; C22F 1/08
U.S. Cl. 148—433 4 Claims

1. Brass having dezincification corrosion resistance, obtained by a process which comprises:

providing a mixture which consists of 58.0% to 62.0% by weight of copper, 0.02% to 0.5% by weight of antimony, 0.5% to 3.0% by weight of lead, 0.2% to 1.0% by weight of tin, 0.1% to 0.5% by weight of iron, and, optionally, at least one member selected from the group consisting of 0.03% to 0.2% by weight of aluminium and 0.03% to 0.2% by weight of silicon, the rest being zinc and unavoidable impurities,

extruding said mixture at a temperature of about 700° C.,

cold drawing the extruded product, and

subjecting the cold drawn product to a stress-relieving treatment to obtain a brass having a fractionated crystal structure and a tensile strength of at least 41.8 kg/mm².

4,417,930

ELECTROPHILIC SOLID PROPELLANT GAS GENERATOR

Joseph E. Flanagan, Woodland Hills, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Mar. 16, 1977, Ser. No. 779,882
Int. Cl.³ C06B 45/10
U.S. Cl. 149—19.9 2 Claims

1. A solid propellant iodine atom gas generator system comprising:

iodine pentoxide as an iodine-containing primary oxidizer,

ammonium perchlorate as a secondary oxidizer,

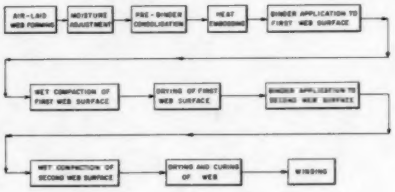
hydroxy-terminated polybutadiene as the binder and fuel.

4,417,931

WET COMPACTION OF LOW DENSITY AIR LAID WEBS AFTER BINDER APPLICATION

Shiu Kang L. Li, Toronto, Canada, assignor to CIP, Inc.

Filed Jul. 15, 1981, Ser. No. 283,426
Int. Cl.³ B29J 5/00; B32B 17/00
U.S. Cl. 156—62.2 11 Claims


AIR-LAID WEB FORMING
MOISTURE ADJUSTMENT
PRE-BINDER CONSOLIDATION
HEAT EMBOSSING
BINDER APPLICATION TO FIRST WEB SURFACE
WET COMPACTION OF FIRST WEB SURFACE
DRYING OF FIRST WEB SURFACE
BINDER APPLICATION TO SECOND WEB SURFACE
WET COMPACTION OF SECOND WEB SURFACE
DRYING AND CURING OF WEB
WINDING

1. The method of manufacturing a low density web of predominantly ligno-cellulosic material comprising the steps of:

a. air laying ligno-cellulosic fibers on a fabric to form a web;

b. applying a liquid binder to the web;

c. compacting the binder-laden web with a wet surface; and

d. drying and curing the wet-compacted web.

4,417,932

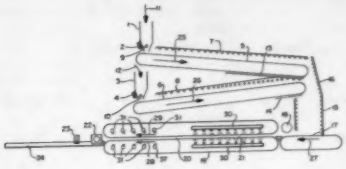
PROCESS FOR THE CONTINUOUS PRODUCTION OF A LENGTH OF STRATIFIED MATERIAL FROM FOAM PARTICLES

Hans-Ulrich Breitscheidel, Siegburg; Paul Spielau, Troisdorf-Eschmar, and Franz-Werner Alfter, Siegburg, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Sep. 25, 1981, Ser. No. 305,726
Claims priority, application Fed. Rep. of Germany, Oct. 1, 9180, 3037011
Int. Cl.³ B29J 5/00; B32B 17/00, 5/18; B29D 27/00
U.S. Cl. 156—62.2 15 Claims

1. A process for the continuous production of a sheeting of stratified material from synthetic resin foam particles which are capable, upon the application of heat, of being bonded together with the use of pressure which comprises scattering foam particles onto a conveying means, preheating the foam particles during conveyance, superficially to a temperature in the range between 100° and 160° C.; thereafter feeding the thus-preheated foam particles to means defining a free falling zone, causing the preheated particle to freefall within said

zone, further heating the particles during falling, to a temperature of at least 200° C., and, at the end of the free fall, piling up



the particles on a support surface, compacting the piled-up particles into a sheetlike layer and then sizing the preliminarily compacted sheet with simultaneous cooling.

4,417,933

VALVE

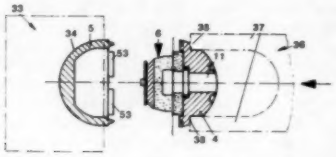
Georg Bernat, Menden, Fed. Rep. of Germany, assignor to Friedrich Grohe Armaturenfabrik GmbH & Co., Hemer, Fed. Rep. of Germany

Division of Ser. No. 47,713, filed as PCT DE78/00014, Jul. 26, 1978, published as WO 79/00114, Mar. 8, 1979, § 102(e) date Apr. 30, 1979, Pat. No. 4,292,997. This application Jun. 8, 1981, Ser. No. 271,928

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1977, 2739154

Int. Cl.³ B29C *27/08*

U.S. Cl. 156—64 **6 Claims**



1. A method of manufacturing a valve cartridge comprising the steps:

assembling a valve assembly comprising first and second valve plates and sealing elements;

placing said valve assembly between two semimonocoque cartridge body members, said body members each having corresponding mating surfaces;

applying joining pressure to said two body members:

applying ultrasonic vibration to said body members in the area of said mating surfaces concurrent with said application of joining pressure whereby a welding of said corresponding mating surfaces occurs;

maintaining said pressure and said ultrasonic vibration to produce material deformation of said corresponding mating surfaces;

discontinuing said ultrasonic vibration when said body members exert a predetermined force on said valve assembly; and removing said joining pressure.

4,417,934

MONITORING A DEPOSIT ON A TRAVELLING WEB

Roger Vaughan, Pill, England, assignor to Imperial Group plc, Bedminster, England

Filed Oct. 16, 1981, Ser. No. 312,120

Claims priority, application United Kingdom, Nov. 5, 1980, 8035614

Int. Cl.³ B32B *31/24*

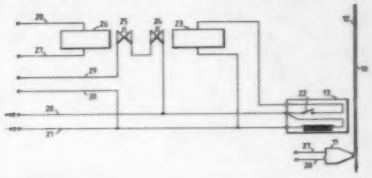
U.S. Cl. 156—64 **7 Claims**

1. In an adhesive application machine a method of monitoring a liquid adhesive applied to a travelling web of material prior to application of the web to an article in the machine, to check for absence of the adhesive from the web, which method comprises,

(a) applying to a travelling web of material by means of an applicator valve a liquid adhesive which has a relative permittivity sufficiently high to distinguish it from the web material,

(b) sensing whether the applicator valve is open and generating a first electrical signal in response to the applicator valve being open,

(c) passing the web carrying the adhesive through the field of a capacitive proximity sensor,



(d) determining by means of the proximity sensor the presence or absence of the adhesive on the web and generating a second electrical signal if the adhesive is absent from the web,

(e) applying the web to the article, and,

(f) generating a third electrical signal consequent on the simultaneous presence of the first and second signals and

(g) actuating by the third signal a means to eject the article and web from the machine at a point distinct from its point of normal exit.

4,417,935

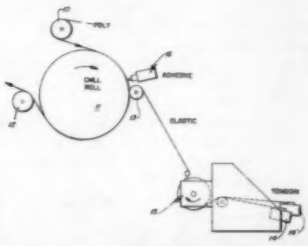
METHOD OF DIAPER MANUFACTURE

Harvey J. Spencer, Green Bay, Wis., assignor to Paper Converting Machine Company, Green Bay, Wis.

Filed Oct. 13, 1981, Ser. No. 310,881

Int. Cl.³ B32B *31/08, 31/10*

U.S. Cl. 156—80 **2 Claims**



1. A method of attaching an elastic ribbon to a moisture impervious web comprising feeding an elastic ribbon to an assembly station in a uniformly stretched condition, feeding a moisture impervious web to substantially inelastic material to said assembly station, intermittently applying a foamed adhesive to said moisture impervious web just prior to said assembly station while said moisture impervious web is in contact with a cooling roll, adhering the stretched elastic ribbon to said moisture impervious web in the area occupied by said adhesive and immediately thereafter nipping said moisture impervious web and stretched elastic ribbon to puncture the air bubbles of the foam, integrating a second web and an absorbent pad means to said moisture impervious web, transversely severing the integrated webs and pad means, folding and packaging the diapers resulting therefrom.

2. A method of attaching an elastic ribbon to a moisture

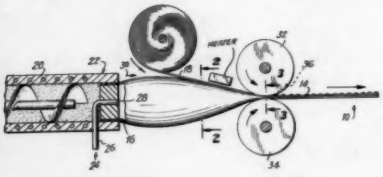
impervious web comprising feeding a solid elastic ribbon to an assembly station in a uniformly stretched condition, feeding a moisture impervious web of substantially inelastic material to said assembly station, intermittently applying a pair of longitudinally extending beads of adhesive having quick setting, low heat properties to said moisture impervious web just prior to said assembly station under conditions promotive of maintaining said moisture impervious web below puckering temperature while maintaining said adhesive with sufficient bonding strength to adhere said ribbon securely to said moisture impervious web when said ribbon and moisture impervious web are nipped together, adhering the stretched elastic ribbon to said moisture impervious web in the area occupied by said adhesive, integrating a second web and an absorbent pad means to said moisture impervious web, transversely severing the integrated webs and pad means, folding and packaging the diapers resulting therefrom.

4,417,936

PLASTIC WEB WITH MULTIPLICITY OF GAS FILLED BUBBLES, CONTAINING PRINTING THEREON AND METHOD OF MAKING SAME

William Gaffney, Bronx, N.Y., assignor to Gafcel Industries, Inc., Bronx, N.Y.

Filed Oct. 19, 1981, Ser. No. 312,532
Int. Cl.³ B29C *17/00*; B32B *31/02*
U.S. Cl. 156—145 **1 Claim**



1. A method of making a thermoplastic web composed of plural thermoplastic laminae mutually defining a multiplicity of gas-filled bubbles, and means providing printing on the exterior surface of the web such that it is an integral part of the web, said web constituting a collapsed blown extruded tube, there being a lamina of thermoplastic material compatible with that of the tube and having printing thereon, said lamina being fused to the external surface of one of the laminae defining the gas-filled bubbles, said method comprising the steps of:

(A) extruding the blown tube within a certain temperature range;

(B) printing on and heating the thermoplastic lamina;

(C) simultaneously passing the extruded tube and the printed lamina between two juxtaposed parallel adjacent cylindrical rollers;

(D) rotating said rollers in opposite directions to draw said extruded tube and said printed heated lamina into a nip between the rollers, at least one of said rollers having a plurality of recesses on its outer surface;

(E) maintaining a subatmospheric pressure in the recesses at the nip whereby said extruded tube is squeezed into a collapsed extruded tube forming a continuous bilaminar web with raised closed gas-filled pockets; and

(F) said certain temperature range being such that the printed heated lamina will autogenously fuse to the collapsed extruded tube as they jointly pass through the nip,

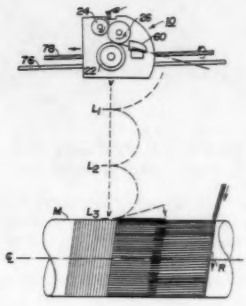
(G) whereby, the printed lamina forms an upper layer of the web.

4,417,937

FIBRE REINFORCED PLASTIC STRUCTURES AND METHOD AND APPARATUS FOR PRODUCING SAME

Giorgio A. Escher, Mahone Bay, and Raymond C. Dahn, Lunenburg, both of Canada, assignors to Atlantic Bridge Company Limited, Nova Scotia, Canada

Continuation-in-part of Ser. No. 183,067, Sep. 2, 1980, abandoned, which is a continuation of Ser. No. 9,804, Feb. 6, 1979, abandoned. This application Jul. 9, 1982, Ser. No. 396,591
Claims priority, application Canada, Feb. 23, 1978, 297587
Int. Cl.³ B65H *81/00*
U.S. Cl. 156—169 **21 Claims**



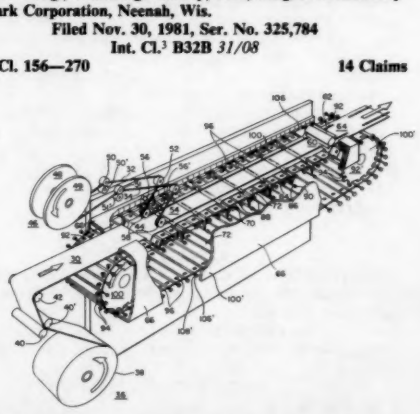
1. A method of applying fibre reinforcing material to a mould surface, said method comprising: passing a strand of continuous length fibre through a cutting device to cut the strand into generally uniform length cut fibres; directing cut fibres endwise away from the cutting device along an initial path of travel; applying a force at a predetermined location along the length of the individual cut fibres to cause the individual cut fibres to deviate from the initial path of travel and to assume a selected motion pattern, and positioning a mould surface so as to intercept the moving cut fibres at a selected phase of the motion pattern to achieve a predetermined orientation of the cut fibres on the mould surface.

4,417,938

PRODUCING AN ELASTICIZED GARMENT UTILIZING AN ARTICULATED CONVEYOR

Wayne C. Sigl, Winnebago County, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

Filed Nov. 30, 1981, Ser. No. 325,784
Int. Cl.³ B32B *31/08*
U.S. Cl. 156—270 **14 Claims**



1. In an apparatus for manufacturing elastic leg disposable diapers including means for continuously moving a web of

material in the direction of its length into engagement with a folding means and means for continuously moving elastic ribbon into engagement with the web, the combination wherein:

the folding means comprises moving articulated means with which the web is brought into engagement, the moving articulated means engaging and holding the web immobile relative to the articulated means along the entire length of the web engaging the articulated means for forming fold pockets in the web;

guide means for causing said articulated means to move from a relatively aligned condition to a folded condition in which the articulated means has fold spaces whereby the fold pockets are formed in the web;

means for moving the elastic ribbon to a position in engagement with the web and spanning said fold pockets; and

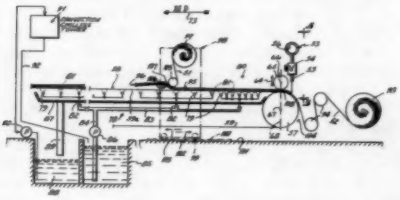
means for adhering the elastic ribbon to the web at positions other than along the fold pockets of the web.

4,417,939

SYSTEM FOR PRODUCING A BITUMEN LAMINATE

Ronald R. McAdams, North Bend, Ohio, assignor to McAdams Manufacturing Co., Inc., Cincinnati, Ohio

Filed Mar. 2, 1982, Ser. No. 353,950
Int. Cl.³ B32B *31/06, 31/12*
U.S. Cl. 156—282 **15 Claims**



1. A method for producing a laminate with a bitumen mastic core, said method comprising the steps of

conveying in a machine direction a preliminary laminate comprised of a lower fabric web with a hot bitumen mastic core deposited thereon,

adhering an upper fabric web to said preliminary laminate on the exposed face of said hot bitumen mastic core at a lamination point,

adjusting said lamination point upstream or downstream relative to said machine direction as desired in order to adhere said upper fabric web to said core face without substantial deterioration of said upper fabric web as might otherwise be caused by the temperature of said hot bitumen mastic core at said lamination point, and

holding said lamination point in a fixed location relative to said machine direction of said preliminary laminate during the production of said laminate, said holding step being performed after said adjusting step has adjusted said lamination point to its desired position.

8. Apparatus for producing a laminate with a bitumen mastic core, said apparatus comprising

a conveyor for conveying, in a machine direction, a preliminary laminate comprised of a lower fabric web with a hot bitumen mastic core deposited thereon,

means for adhering an upper fabric web to said preliminary laminate on the exposed face of said bitumen mastic core at a lamination point,

means for adjusting said lamination point upstream or downstream relative to said machine direction as desired in order to adhere said upper fabric web to said core face without substantial deterioration of said upper fabric web as might otherwise be caused by the temperature of said hot bitumen mastic core at said lamination point, and

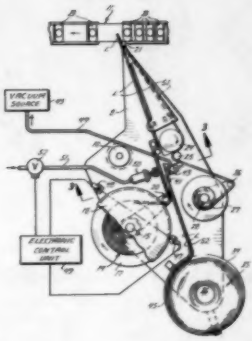
means for holding said lamination point in a fixed position relative to said machine direction of said preliminary laminate during the production of said laminate, said holding means being operational after said adjusting means has adjusted said lamination point to its desired position.

4,417,940

SPLICER FOR LABEL FEEDER

Harry D. Koster, Breckenridge Hills, Mo., assignor to Chemical Dynamics, Inc., St. Louis, Mo.

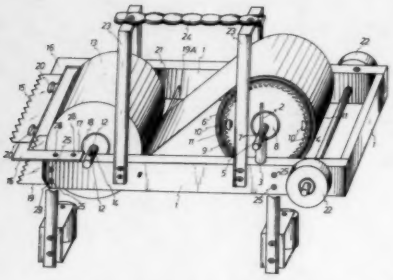
Filed Jan. 29, 1981, Ser. No. 229,509
Int. Cl.³ B32B *31/00*
U.S. Cl. 156—351 **4 Claims**



1. In a label-feeder and splicing machine for use with strips of labels adhered to one side of a backing strip: a supply roll for such labels, a base, a supply roll mounting to hold the supply roll on the base, means to conduct a main label strip from the supply roll along a predetermined path to adjacent a point at a line of products to be labelled; a peeling edge at such point, a tension arm swivelled to the base to engage the tape between the supply roll and the peeling edge, a feed roll adjacent the path back of the peeling edge and adjacent to the other side of the backing strip but spaced therefrom so as not to interfere with travel of the strip, the feed roll being adapted to pull the backing strip around the peeling edge and enable the labels to move to the line of products; a rewind roll to receive the backing strip; the rewind roll being adjacent the other two rolls on the opposite side of the strip to the supply roll, means conducting the backing strip away from the feed roll to the rewind roll at a point spaced from the main label strip so as to provide a space between the main label strip path and the backing strip and rewind roll; a single motor having means to drive the feed roll, the rewind roll and the supply roll intermittently at a constant predetermined linear rate; means to support a supplemental label strip roll adjacent the main roll, means to direct the supplemental strip from the supplemental roll along a path between the supply roll and the rewind roll to adjacent the space between the path of the main label strip and the backing strip, releasable means in the said space to hold the end of the supplemental strip at a point in said space adjacent the main strip but out of contact therewith, the releasable means being downstream from the tension arm; means including a movable pressure-applying device on the other side of the main strip opposite the releasable means, operable to press the strips together for purposes of splicing the end of the supplemental strip and the tail end of the main strip together; sensing means responsive to the absence of the main strip at its tail end to energize the pressure-applying device to cause splicing to occur, including means to quickly cause withdrawal of the pressure-applying device to enable the spliced strip to be fed rapidly, the sensing means being located a distance from the

pressure-applying device such that the slicing occurs approximately at the end of the supply strip tail.

4,417,941
PORTABLE CARTON BOX SEALER WITHOUT TOUCHING THE TAPE BY HAND
Yng-Lang Lin, No. 234, Hwai-Teh St., Pan-Chiao, Taiwan
Filed Jun. 4, 1981, Ser. No. 270,390
Int. Cl.³ B32B *35/00*
U.S. Cl. 156—475 **8 Claims**



1. A hand-held carton sealer enabling automatic sealing of carton surfaces, comprising:

a planar frame having a roll of tape associated therewith;

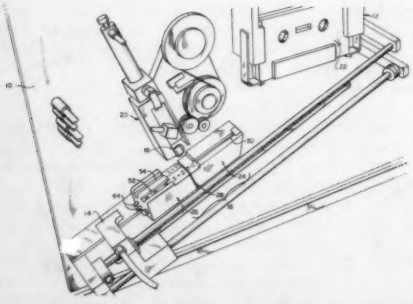
means for rotatably supporting said roll of tape at a forward portion of said frame so that tape may be freely pulled therefrom;

means for applying said tape to the surface to be sealed, said applying means being located rearwardly of said tape roll, and said tape being applied to said surface at a location beneath said frame; and

blade means disposed at a rearward portion of said frame for cutting the tape when sealing of said surface has been completed;

said frame further including means for locating a portion of the width of the tape over a carton edge, said locating means being carried below and within said frame.

4,417,942
TAPE SPLICING BLOCKS
David Kincheloe, Upton, Mass., assignor to King Instrument Corporation, Westboro, Mass.
Filed Sep. 25, 1981, Ser. No. 305,700
Int. Cl.³ B31F *5/06*; B65H *21/00*
U.S. Cl. 156—502 **6 Claims**



1. A splicing block assembly for supporting ends of a plurality of tape-like items to be spliced, said assembly comprising, in combination:

a stationary block having a first guideway for receiving one of said tape-like items;

a rotationally movable block adjacent said stationary block, said movable block having a second guideway and a third guideway for receiving a pair of said tape-like items, said movable block being rotatably supported so as to be capable of rotation on an axis parallel to and substantially equidistant from said first, second, and third guideways, said movable block having first and second prismatic faces substantially parallel to said axis;

means for rotating said movable block on said axis selectively in a first direction and a second direction; and

alignment means limiting rotational motion of said movable block between a first position wherein said first and second guideways are colinear and a second position wherein said first and third guideways are colinear, said first and second positions being determined by the alternate contact of said first and second prismatic faces on said movable block with a stationary member secured to said stationary block.

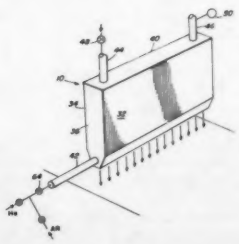
4,417,943
METHOD FOR CONTROLLING THE OXYGEN LEVEL OF SILICON RODS PULLED ACCORDING TO THE CZOCHRALSKI TECHNIQUE
Combronde Jacques, Saint Fargeau-Ponthierry, and Jean-Claude Felix, Le Chatelet en Brie, both of France, assignors to International Business Machines Corporation, Armonk, N.Y.
Filed May 22, 1981, Ser. No. 266,227
Claims priority, application European Pat. Off., Jun. 26, 1980, 80430013.5
Int. Cl.³ C30B *15/22*
U.S. Cl. 156—601 **4 Claims**

1. An improved method for the production of a silicon monocrystalline rod grown according to the Czochralski method, in which the oxygen content (O_2) is relatively high and maintained substantially constant throughout the length, L, of the rod at a desired value, the improvement comprising:

determining the average oxygen content profile (O_2) of the rod specific to the pulling equipment used when grown with a constant crucible rotation speed $(V_{RC})_O = R_O$, and

controlling the crucible rotation speed V_{RC} during the pulling so that its slope is opposite to the slope of the previously measured average oxygen concentration profile.

4,417,944
CONTROLLED HEAT SINK FOR CRYSTAL RIBBON GROWTH
David N. Jewett, Under Pin Hill Rd., Harvard, Mass. 01451
Continuation of Ser. No. 166,026, Jul. 7, 1980, abandoned. This application Sep. 14, 1981, Ser. No. 301,639
Int. Cl.³ C30B *15/06*
U.S. Cl. 156—608 **7 Claims**



1. The method of forming a crystalline ribbon from a melt of

crystal forming material of silicon composition, comprising the steps of

(a) heating a melt of said material in a crucible having a shallow portion forming a shallow pool of said melt,

(b) placing on the surface of said melt in said shallow pool a crystalline seed of said material,

(c) controlling the temperature of said melt in said shallow pool to allow solidification of said melt at a free edge of said seed to form a ribbon while withdrawing said seed from said melt at a positive acute angle with respect to the melt surface at a speed commensurate with the longitudinal growth of said ribbon,

(d) providing a site of attachment inwardly from the edges of said crucible for a meniscus formed by the melt from the lower face of said ribbon as it leaves the surface to said melt to reduce spillage and freezing thereof and controlling the temperature of said melt selectively within the melt below both side edges of said ribbon to control the width of said ribbon,

(e) locating a heat sink above the surface of said melt and providing a thermally conductive gaseous medium between the melt surface proximate the growing end of said ribbon and said heat sink to control the growth of said ribbon,

(f) separately and actively cooling said heat sink at a rate corresponding to the rate of heat transfer from said melt through said gaseous medium to said heat sink, and

(g) replenishing the supply of melt in said shallow portion to maintain a substantially constant level therein.

4,417,945

APPARATUS FOR CHEMICAL ETCHING OF A WAFER MATERIAL

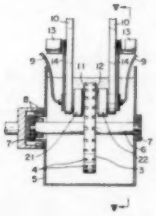
Yasuo Komatsuzaki, Annaka, Japan, assignor to Shin-Etsu Handotai Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1983, Ser. No. 460,355

Claims priority, application Japan, Mar. 29, 1982, 57-50483

Int. Cl.³ H01L *21/306*

U.S. Cl. 156—639 **8 Claims**



7. A method for chemically etching the surface of a wafer material in an etching solution contained in an etching vat which comprises the steps of

(a) holding the wafer material with a holding means in the etching solution in such a manner that one of the surfaces of the wafer material is exposed free to the etching solution and the wafer material is held closely side-by-side to face a disk rotatable in the etching solution around an axis to make a narrow gap space between the free surface of the wafer material and the disk, said disk being provided on the surface facing the wafer material with at least one liquid flow channel,

(b) rotating the disk around the axis thereof,

(c) rotating the wafer material around the axis thereof, and

(d) moving the wafer material reciprocative-ly in parallel with the rotating disk along a radial direction thereof.

4,417,946

METHOD OF MAKING MASK FOR STRUCTURING SURFACE AREAS

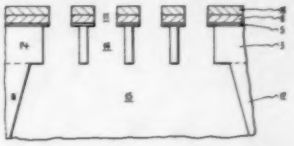
Harald Bohlen, Boeblingen; Helmut Engelke, Altdorf; Johann Greschner, Pliezhausen, and Peter Nehmiz, Stuttgart-Rohr, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 126,602, Mar. 3, 1980, Pat. No. 4,342,817. This application May 10, 1982, Ser. No. 376,320

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1979, 2922416

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*

U.S. Cl. 156—643 **12 Claims**



1. A method of making a mask comprising applying at least one metallic layer on the front of a semiconductor substrate, etching a mask in said metallic layer, etching the semiconductor surface exposed in the etched metallic layer to a predetermined depth, and etching tub-shaped recesses from the back of said semiconductor substrate to such a depth that the holes etched into the semiconductor front also open toward the wafer back, prior to the application of said metal layer said semiconductor substrate is doped from the wafer front down to a predetermined depth to produce a surface layer, said doping differing from the remaining substrate, applying an oxide layer onto the top of said metal layer, etching apertures with vertical walls in the shape of said mask pattern in said oxide layer to expose said metal layer, etching through the metal layer and then into the semiconductor substrate deeper than the thickness of the doped surface layer and underetching the metal layer.

4,417,947

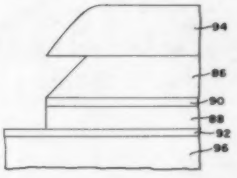
EDGE PROFILE CONTROL DURING PATTERNING OF SILICON BY DRY ETCHING WITH CCl_4-O_2 MIXTURES

Alfred I. Pan, San Jose, Calif., assignor to Signetics Corporation, Sunnyvale, Calif.

Filed Jul. 16, 1982, Ser. No. 398,742

Int. Cl.³ H01L *21/308*

U.S. Cl. 156—643 **12 Claims**



1. A method for selectively etching a silicon region of an integrated circuit component, the method comprising the steps of:

forming a mask along a surface of the region such that the mask has at least one edge along which silicon of the region is exposed; and

subjecting the component to a plasma comprising ions of carbon tetrachloride and oxygen to etch away silicon exposed through the mask while varying the proportion of oxygen in

the plasma so as to control the etching between isotropic and anisotropic modes.

4,417,948

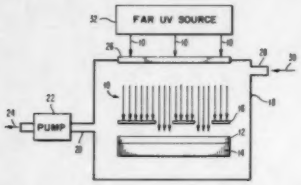
SELF DEVELOPING, PHOTOETCHING OF POLYESTERS BY FAR UV RADIATION

Veronica I. Mayne-Banton, and Rangaswamy Srinivasan, both of Ossining, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 9, 1982, Ser. No. 396,985

Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*

U.S. Cl. 156—643 **23 Claims**



1. A method for etching polyethylene teraphthalate (PET) comprising photoetching said PET to a depth of at least 1,000 Å without degradation of the bulk of the PET by irradiating said PET with uv radiation having wavelengths less than 220 nm.

4,417,949

ENHANCED ALUMINUM ETCHANT

Walter E. Lindner, and Elias Malakelis, both of St. Louis County, Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Filed Sep. 7, 1982, Ser. No. 415,146

Int. Cl.³ C23F *1/00, 1/02*

U.S. Cl. 156—665 **3 Claims**

1. A process of chem-milling aluminum and aluminum alloys comprising the steps of adding in increments up to 70 g/l of sodium nitrate to a chem-milling composition which contains sodium hydroxide and continuing the chem-milling until the concentration of dissolved aluminum in the solution is about 120 g/l.

4,417,950

PAPERMAKING MACHINE CONTAINING TWO MOVABLE WATER PERVIOUS DEWATERING BANDS

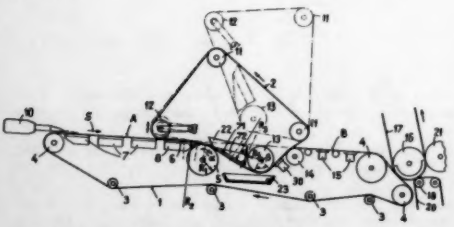
Alfred Bubik, Ravensburg, and Kurt Hack, Vorberg, both of Fed. Rep. of Germany, assignors to Escher Wyss GmbH, Ravensburg, Fed. Rep. of Germany

Filed Nov. 16, 1981, Ser. No. 321,677

Claims priority, application Switzerland, Nov. 26, 1980, 8746/80

Int. Cl.³ D21F *1/40*

U.S. Cl. 162—300 **14 Claims**



1. A papermaking machine comprising:

two movable water pervious dewatering bands defining a lower band and an upper band;

said lower band possessing an essentially horizontally extending and essentially planar band portion;

a headbox cooperating with said substantially planar band portion for the infeed of a fiber stock suspension for deposition onto the lower band;

a dewatering shoe having a domed surface over which there can be guided at least one of said bands;

a dewatering cylinder arranged after the dewatering shoe with respect to the direction of travel of both of said bands and over which both of said bands are conjointly guided over a portion of the circumference of said dewatering cylinder;

the domed surface of said dewatering shoe possessing a larger radius of curvature than the radius of curvature of said dewatering cylinder;

a deflection roll arranged following the dewatering cylinder with respect to the direction of movement of said bands;

said deflection roll being located at the side of both bands which faces away from said dewatering cylinder;

both of said bands being conjointly guided over said deflection roll throughout a portion of the circumference of said deflection roll at a contact surface thereof in a manner such that due to the action of said deflection roll there can be altered the direction of the bands in a sense opposite to the deflection of the bands which is accomplished by the dewatering cylinder;

said contact surface of said deflection roll for both of said bands being located, during operation of the papermaking machine, totally within a projection of the height of the dewatering cylinder; and

means for deflecting the lower band at a location following said deflection roll so as to cause said lower band following said deflection roll to travel essentially horizontally towards an outfeed end of the papermaking machine and in a direction corresponding essentially to the direction of said horizontally extending and essentially planar band portion of the lower band cooperating with said headbox, so that the lower band essentially maintains a horizontal direction of extent throughout the papermaking machine in order to have said lower band essentially maintain a configuration comparable to a lengthwise extending band of a longitudinal papermaking machine.

4,417,951

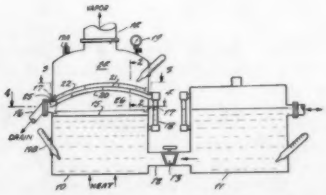
DISTILLER AND EVAPORATOR FOR SEA WATER

Jovo Stanisic, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and George Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Nov. 3, 1980, Ser. No. 203,063

Int. Cl.³ C02F *1/04*

U.S. Cl. 202—197 **2 Claims**



1. A Sea water distiller comprising a sea water supply tank connected by a conduit to the bottom of an evaporator with heating means, including a ring plate mounted around the inside periphery of said evaporator at a predetermined level, said ring plate including a peripheral drainage canal in combination with a plurality of spaced vertically curvate baffles above said plate, the lowermost of said baffles having a periph-

eral edge positioned above and laterally adjacent said canal whereby moisture is directed and drained from said baffle to said canal, in further combination with a drainage pipe having an inlet in communication with said canal for drainage purposes, said baffles having upward oriented diffusers and an upper solid baffle superimposed over said baffles with the diffusers, said upper baffle having an outer edge spaced from evaporator inner surface whereby deflected steam vapor is directed peripherally to the said edge and to a steam space above said upper baffle, including a steam outlet above said steam space wherein said diffusers including means for variably restricting water drops from passing therethrough comprising a Venturi section in said diffusers with electrical means in the Venturi section for vaporizing water drops upon contact of said electrical means with water drops.

4,417,952

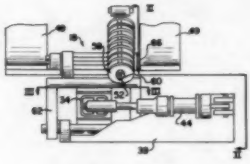
APPARATUS FOR CLEANING COKE OVEN DOORS

Rodney C. Irwin, Monroeville, Pa., assignor to Koppers Company, Inc., Pittsburgh, Pa.

Filed Dec. 28, 1981, Ser. No. 334,967

Int. Cl.³ C10B *25/06, 43/04*

U.S. Cl. 202—241 **7 Claims**



1. A device for cleaning a horizontal section of a coke oven door seal ring, said horizontal section having a vertical planar surface and a knife edge surface, comprising:

(a) a lower base structure having a central upwardly projecting pin;

(b) an arm member pivotally fixed on said upwardly projecting pin so as to oscillate thereon through a horizontal arc;

(c) a cleaning head member engageable with said seal ring and pivotally connected to the terminal end of said arm member so as to be pivotable thereon in a second horizontal arc and said cleaning head member having an elongated body portion that holds a plurality of longitudinally angled chisel-like blades for contacting the seal ring vertical planar surface, said blades forming an acute angle in scraping relationship with said vertical planar surface;

(d) means for pivoting the arm member on said upwardly projecting pin;

(e) a supporting frame structure suspended over the arm member and having a compressible means for resisting and exerting force along its longitudinal axis attached thereto at a point above said arm member;

(f) a vertical idler link pivotally connected at its upper end to said supporting frame structure and at its lower end to said base structure; and

(g) a second vertical link connected at its upper end to said compressible means for resisting and exerting force along its longitudinal axis and at its lower end to said base structure and medially and pivotally connected to said frame structure, such that as the cleaning head is moved from a central position on the horizontal section of the seal ring by oscillation of the arm member on the upwardly projecting pin of said lower base structure, the second vertical link will be pivoted to move the lower base structure toward said horizontal section, and as the cleaning head member is returned to said central position by oscillation of the arm member the second vertical link will be pivoted to move the lower base structure away from said horizontal section so that the cleaning head member will bear against the vertical planar surface of the horizontal section of the seal ring with approximately constant pressure as it is displaced from side to side thereon.

4,417,953

PROCESS AND APPARATUS FOR SEPARATING AN ELECTROLYTIC DEPOSIT FROM BOTH SIDES OF A CATHODE

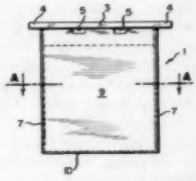
Jean F. Viellefont, Herenthout, and Henri M. F. J. Forton, Neerpelt, both of Belgium, assignors to Metallurgie Hoboken-Overpelt, Hoboken, Belgium

Filed Jul. 27, 1981, Ser. No. 287,069

Claims priority, application Luxembourg, Aug. 6, 1980, 82691

Int. Cl.³ C25D *1/04, 17/00*

U.S. Cl. 204—12 **19 Claims**



1. A process for separating electrolytic deposits from both sides of a generally vertically suspended cathode, comprising detaching at least a portion of the upper edge of each deposit from its respective side of the cathode, attaching a set of suction cups to each deposit, moving said sets of suction cups in a first step to an intermediate position, in which the deposits attached to the sets of suction-cups are in a form of a substantially V-shaped-configuration so that deposits are separated off the cathode downwardly, and bringing in a second step the sets of suction-cups from said intermediate position to a rest position in which the sets of suction-cups are oriented so that the deposits attached thereto are positioned beneath them.

4,417,954

ELECTROLYTE FOR THE ELECTRODEPOSITION OF ALUMINUM

Siegfried Birkle, Höchstadt, and Klaus Stöger, Nuremberg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jan. 25, 1983, Ser. No. 460,817

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1982, 3202265

Int. Cl.³ C25D *3/44*

U.S. Cl. 204—14 N **6 Claims**

1. An organometallic electrolyte for the electrodeposition of aluminum, comprising: a metal fluoride composition of the formula

$$MeF.[(m-n)AlEt_3.nAlR_3],$$

wherein,

Me is potassium rubidium or cesium;

R is H or C_xH_{2x+1}, x being an integer selected from 1 and 3 to 8,

m is a number from 1.3 to 2.4 and n is a number from 0.1 to 1.1, m being larger than 2n; and

at least two R groups are alkyls selected from said formula C_xH_{2x+1}.

4,417,955

METHOD OF AND SOLUTION FOR ELECTROPLATING CHROMIUM AND CHROMIUM ALLOYS AND METHOD OF MAKING THE SOLUTION

Donald J. Barclay, Olivers Battery, and William M. Morgan, Chandlers Ford, both of England, assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 913,639, Jun. 8, 1978, abandoned, which is a continuation-in-part of Ser. No. 833,634, Sep. 15, 1977, abandoned, which is a continuation-in-part of Ser. No. 637,483, Dec. 3, 1975, Pat. No. 4,062,737. This application Sep. 22, 1982, Ser. No. 421,635

Claims priority, application United Kingdom, Jan. 26, 1977, 3179/77

The portion of the term of this patent subsequent to Feb. 27, 1996, has been disclaimed.

Int. Cl.³ C25D *3/06, 3/56*

U.S. Cl. 204—43 R **18 Claims**

1. An electroplating solution consisting essentially of an aqueous, time and temperature equilibrated solution of buffered chromium(III) thiocyanate complexes having at least one ligand other than thiocyanate or water selected from the group Cl^{-1}, Br^{-1}, SO_4^{-2}, PO_4^{-3}, and NO_3^{-1} in the chromium(III) inner coordination sphere, said equilibration being equivalent to that which is achieved by heating the solution for about one hour at 80° C., and the solution concentration of chromium-to-thiocyanate being in the molar ratio of from 1-to-2 to 1-to-6.

11. A solution as claimed in claim **1** further characterized by a source of nickel comprising nickel sulphate ($NiSO_4.6H_2O$) whereby to plate chromium nickel alloy.

4,417,956

ALKALINE PLATING BATHS AND ELECTROPLATING PROCESS

Ewald H. McCoy, Brookfield, Wis., assignor to Electrochemical Products, Inc., New Berlin, Wis.

Division of Ser. No. 169,752, Jul. 17, 1980, Pat. No. 4,356,067, which is a continuation-in-part of Ser. No. 48,265, Jun. 13, 1979, abandoned. This application Sep. 28, 1982, Ser. No. 426,005

Int. Cl.³ C25D *3/58*

U.S. Cl. 204—44 **6 Claims**

1. A brightener for a cyanide-free electroplating bath for brass, said brightener being selected from metal ions consisting of antimony ions, cadmium ions, lead ions, selenium ions, tellurium ions, cobalt ions, nickel ions and molybdenum ions, and organic substances selected from aldehydes, compounds having carbonyl groups, compounds having C—SH groups, compounds having C═S groups, thiobenzanilide, 5-sulfosalicyllic acid and sulfamide.

4,417,957

AQUEOUS ACID PLATING BATH AND BRIGHTENER MIXTURE FOR PRODUCING SEMIBRIGHT TO BRIGHT ELECTRODEPOSITS OF TIN

William E. Rosenberg, Strongsville, Ohio, assignor to Columbia Chemical Corporation, Macedonia, Ohio

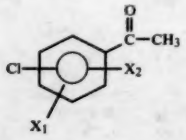
Filed Sep. 3, 1982, Ser. No. 414,582

Int. Cl.³ C25D *3/32*

U.S. Cl. 204—54 R **19 Claims**

1. A primary tin plating brightening mixture, comprising:

from about 1 to about 25 percent by weight of a chlorinated acetophenone having the formula:

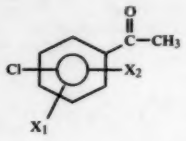


where X_1 and X_2 are ring substituted chlorine atoms or hydrogen atoms, and

from about 1 to about 97 percent by weight of a compound selected from the group consisting of acrylic acid, methacrylic acid, and combinations thereof.

10. An aqueous acid electroplating bath containing stannous ions and sulfuric acid for producing electrodeposits of tin, comprising:

from about 0.005 to about 0.2 grams per liter of bath solution of a chlorinated acetophenone having the formula:



wherein X_1 and X_2 are ring substituted chlorine atoms or hydrogen atoms.

4,417,958

PROCESS FOR EXTINGUISHING THE ANODE EFFECT IN THE ALUMINUM ELECTROLYSIS PROCESS

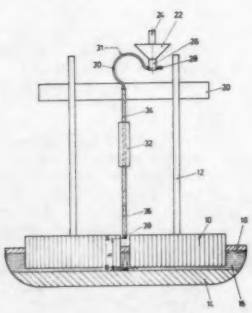
Tomas Arnason, Essen, Fed. Rep. of Germany; Alwis Franke, Gardabae, Iceland, and Theodor Tschopp, St. Louis, Mo., assignors to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Aug. 21, 1981, Ser. No. 294,912

Claims priority, application Switzerland, Sep. 9, 1980, 6745/80

Int. Cl.³ C25C *3/06, 3/14, 3/20*

U.S. Cl. 204—67 **13 Claims**



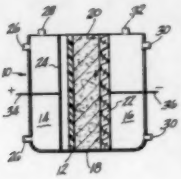
1. Process for extinguishing the anode effect which occurs during the production of aluminum by fused salt electrolysis, which comprises introducing into the molten electrolyte and under the anodes immediately after the anode effect appears, fine grained salts which are not harmful to the electrolytic process and which decompose to cause a vigorous production of gas at the operating temperature, wherein said salts are introduced into the molten electrolyte via an injection or carrier medium under pressure, thereby extinguishing the anode effect in a short period of time.

4,417,959

ELECTROLYTIC CELL HAVING A COMPOSITE ELECTRODE-MEMBRANE STRUCTURE

Igor V. Kadija; Kenneth E. Woodard, Jr., and David D. Justice, all of Cleveland, Tenn., assignors to Olin Corporation, New Haven, Conn.

Filed Oct. 29, 1980, Ser. No. 201,892
Int. Cl.³ C25B 1/34, 11/03
U.S. Cl. 204—98 14 Claims



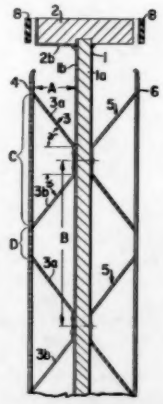
1. An electrolytic cell for the electrolysis of aqueous solutions of alkali metal chlorides which comprises a pair of reticulate electrodes of opposite polarity separated by a hydraulically impermeable ion exchange membrane, each of said reticulate electrodes being a three dimensional structure and comprised of a plurality of electroconductive filaments randomly distributed while having a plurality of contact points with adjacent filaments, said reticulate electrodes, having a porosity of from about 80 to about 98 percent, being in contact with said membrane, and means for applying an electric potential to said reticulate electrodes, said means comprised of electrically conductive fabrics having hooks or barbs as attachment means to said reticulate electrode.

4,417,960

NOVEL ELECTROLYZER AND PROCESS

Alberto Pellegri, Luino, Italy, assignor to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Division of Ser. No. 128,972, Mar. 10, 1980, Pat. No. 4,279,731. This application Jan. 6, 1981, Ser. No. 222,958
Claims priority, application Italy, Nov. 29, 1979, 27690 A/79
Int. Cl.³ C25B 1/34
U.S. Cl. 204—98 10 Claims



1. A process for the electrolysis of an aqueous solution of an alkali metal halide in a bipolar, diaphragm type electrolyzer equipped with vertical foraminous electrodes comprising carrying out the electrolysis process with electrode compartments substantially filled with electrolyte, dividing said electrode compartments into a series of vertical flow channels extending for a substantial portion of the height of the compartments with a series of baffles of a width substantially corresponding to the depth of the compartment and alternately inclined one way and the opposite with respect to the vertical plane normal to the plane of the separating wall and spaced apart one another, the ratio between the electrode surface intercepted by the edges of two baffles laterally defining a vertical flow channel and the flow section thereof being substantially different from the ratio between the electrode area intercepted by the edge of one of said baffles and of the one adjacent thereto in the series and the flow section of the channel adjacent to said channel, feeding concentrated brine to the anode compartments and water to the cathode compartments, generating multiple recirculation motions of the electrolyte contained in said compartments, said recirculation motions being distributed along the entire width of the compartments as the result of different densities of gas bubbles in adjacent channels and discharging the gas and the electrolyte effluent therefrom through outlets at the top of each compartment.

4,417,961

MEMBRANE CELL BRINE FEED

Bobby R. Ezzell, Lake Jackson, and Harry S. Burney, Jr., Clute, both of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 30, 1981, Ser. No. 248,670
Int. Cl.³ C25B 1/34
U.S. Cl. 204—98 57 Claims

1. A process for producing chlorine and an alkali metal hydroxide solution in an electrolytic cell containing a permselective cation exchange membrane disposed between an anode and a cathode to form an anolyte compartment and a catholyte compartment, said process comprising:

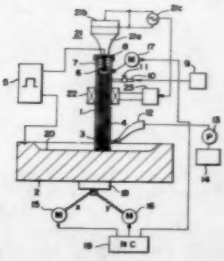
electrolyzing an alkali metal chlorine solution in said electrolytic cell with said alkali metal solution containing carbonate anions and carbon dioxide in such low concentrations so that the sum of their concentrations is no greater than about 70 ppm (expressed as parts per million carbon dioxide) at the moment before said solution becomes a part of the anolyte in the anolyte compartment in order that said permselective membrane in said cell will maintain a longer usefulness in producing chlorine and alkali metal hydroxide at low electrical energy consumption per unit of product produced.

4,417,962

ELECTROEROSIVE MACHINING METHOD AND APPARATUS WITH DISCRETE METALLIC ELECTRODE BODIES

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed May 12, 1981, Ser. No. 262,931
Claims priority, application Japan, May 15, 1980, 55-64468
Int. Cl.³ B23P 1/04, 1/10, 1/12; B23K 9/16
U.S. Cl. 204—129.46 33 Claims



1. A method of electroerosively machining an electrically

conductive workpiece to form a cavity therein, comprising the steps of:

axially juxtaposing an elongate, open-ended tubular casing of a heat-resistant material with said workpiece to define an electroerosion machining site in the region of said workpiece proximal to the open-ended portion of said casing, said casing having discrete metallic bodies packed therein in such a manner that they are arranged in a mutually contacting relationship at least in a longitudinal direction of said casing, each individually capable of constituting an electroerosion electrode;

feeding a machining fluid into said machining site;

feeding said discrete metallic bodies in said casing to discharge them successively into said machining region;

passing an electroerosion machining current through said site between said workpiece and said discrete metallic bodies discharged into the machining site to electroerosively remove material from said region of the workpiece against said bodies functioning as counterelectrodes in said machining fluid; and

relatively displacing said heat-resistant casing and said workpiece three-dimensionally while maintaining said open-ended portion in the proximity of said region of the workpiece so as to cause said open-ended portion to effectively sweep in a scanning manner over a predetermined zone of said workpiece to form said cavity therein.

4,417,963

PROCESS FOR REMOVING CYANIDE IONS FROM SOLUTIONS

Jouko Janne, Köping, Sweden, assignor to Nils-Erik Södermark, Köping, Sweden

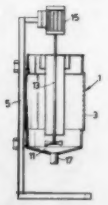
PCT No. PCT/SE81/00205, § 371 Date Mar. 1, 1982, § 102(e) Date Mar. 1, 1982, PCT Pub. No. WO82/00288, PCT Pub. Date Feb. 4, 1982

PCT Filed Jul. 7, 1981, Ser. No. 355,749

Claims priority, application Sweden, Jul 11, 1980, 8005138

Int. Cl.³ C25B *1/00*

U.S. Cl. 204—130 **13 Claims**



1. A process for removing cyanide ions from a cyanide-containing solution by anodic oxidation, the solution being adjusted to a pH of at least about 11 and to a halide content at least equivalent to the cyanide concentration, characterized thereby that electrolysis is performed under intense agitation of the electrolyte to result in deposition of solid carbon on the anode.

4,417,964

METHOD OF PREPARING OLEFINIC COMPOUNDS

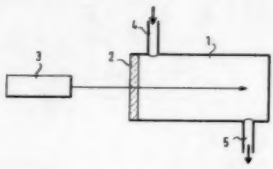
Jürgen Wolfrum, Rosdorf; Michael Kneba, Göttingen, both of Fed. Rep. of Germany, and Peter N. Clough, Belfast, Ireland, assignors to Max-Planck-Gesellschaft zur Förderung der Wissenschaften e.v., Göttigen, Fed. Rep. of Germany

Continuation of Ser. No. 158,010, Jun. 9, 1980, abandoned. This application Nov. 2, 1982, Ser. No. 438,664

Claims priority, application Fed. Rep. of Germany, Sep. 21, 1979, 2938353; Mar. 7, 1980, 3008848

Int. Cl.³ B01J *19/12*

U.S. Cl. 204—158 R **20 Claims**



1. Method of preparing a compund having at least one olefinic double bond, which method comprises initiating a chain reaction by irradiating the corresponding saturated halogenated compound in gaseous form, with pulsed coherent light or incoherent light, adjusting the wavelength of the irradiated light and the pressure and temperature conditions so that a capture cross-section of 10^{-15} to 10^{-25} cm^2 per molecule results, to split off hydrogen halide from said corresponding saturated compound yielding said olefinic compound.

4,417,965

METHOD OF TREATING A RARE-EARTH MINERAL

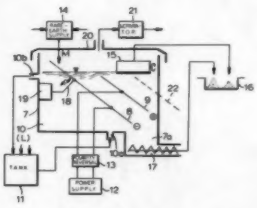
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jun. 16, 1981, Ser. No. 274,258

Claims priority, application Japan, Jun. 20, 1980, 55-84362

Int. Cl.³ C25B *1/00*

U.S. Cl. 204—164 **15 Claims**



1. A method of dissociating a rare-earth mineral or concentrate in a pulverized form, comprising the steps of:

positioning the pulverized rare-earth mineral or concentrate in mixture with an aqueous solution of an electrolyte at least in a region between a pair of electrodes, said electrolyte being at least one substance selected from the group which consists of potassium acetate, ammonium hydroxide, ammonium chloride, sodium chloride, sulfuric acid, sodium carbonate, sodium hydroxide and potassium hydroxide; and

effecting electrical discharges between said electrodes at least through said region in the presence of said solution of the electrolyte whereby the individual particles of said rare-earth mineral or concentrate are subjected to said electrical discharges so as to form a rare-earth metal compound of the electrolyte.

4,417,966

APPARATUS AND METHOD OF PRODUCING OZONE

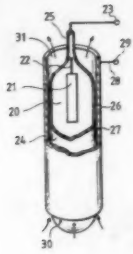
Ralf Krauss, Palma de Mallorca, Spain, and Rainer Koehne, Essen, Fed. Rep. of Germany, assignors to Innovatron Krauss & Co., Switzerland

Filed Nov. 12, 1981, Ser. No. 320,497

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043176

Int. Cl.³ C01B 13/10

U.S. Cl. 204—176 11 Claims



10. A method for producing ozone, comprising the steps of:

surrounding a first electrode by a second annular electrode;

disposing at least one tubular wall of electrically insulating material between the electrodes;

sealing at least one of the electrodes in a glow discharge chamber, formed at least in part by the tubular wall;

filling the glow discharge chamber with an ionizable gas, at low pressure;

energizing the electrodes by applying an electrical potential therebetween in the form of voltage pulses at a frequency in the range of 10 to 60 KHz; and,

moving an oxygen charged medium between the electrodes, the ionized gas in the glow discharge chamber forming a plasma electrode.

4,417,967

GROOVED GEL

Robert S. Ledley, Silver Spring, Md., assignor to Georgetown University, Washington, D.C.

Filed Nov. 24, 1981, Ser. No. 324,447

Int. Cl.³ B01D 57/02; C25B 7/00; C25D 13/00

U.S. Cl. 204—180 G 20 Claims

1. A grooved gel arrangement suitable for two-dimensional gel electrophoresis comprising:

a base portion having a latitudinal direction and a longitudinal direction, and including a grooved portion having grooves extending in said longitudinal direction for substantially the entire longitudinal width of said plate, said grooves being of such spacing that said grooves inhibit latitudinal spreading of protein which has been separated in said latitudinal direction when said protein travels in said longitudinal direction along said grooves;

a gel disposed on said grooved portion and filling in said grooves thereof; and

a top portion disposed on top of said base portion, with said gel sandwiched therebetween.

4,417,968

MAGNETRON CATHODE SPUTTERING APPARATUS

Harold E. McKelvey, Plymouth, Mich., assignor to Shatterproof Glass Corporation, Detroit, Mich.

Filed Mar. 21, 1983, Ser. No. 477,069

Int. Cl.³ C23C 15/00

U.S. Cl. 204—192 R 15 Claims

1. A magnetron cathode sputtering apparatus, comprising an evacuable coating chamber, a central cylindrical cathode mounted in said chamber, a plurality of auxiliary cylindrical cathodes also mounted in said chamber in surrounding relation to and parallel with said central cathode, means for rotating said central cathode and each of said auxiliary cathodes, a rotatable carrier for the articles to be coated positioned between said central cathode and said auxiliary cathodes, means for revolving said article carrier around said central cathode, and means for simultaneously rotating the articles carried by said carrier.

4,417,969

SULFONIC ACID ELECTROLYTIC CELL MEMBRANES

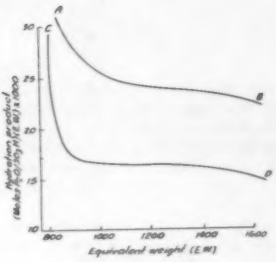
Bobby R. Ezzell, Lake Jackson; William P. Carl, Angleton, and William A. Mod, Lake Jackson, all of Tex., assignors to The Dow Chemical Co., Midland, Mich.

Division of Ser. No. 158,424, Jun. 11, 1980, Pat. No. 4,358,545.

This application Jan. 21, 1982, Ser. No. 341,431

Int. Cl.³ C25B 9/00, 1/14

U.S. Cl. 204—252 7 Claims



1. An electrolytic cell of the type having

(a) an anode in an anode chamber;

(b) a cathode in a cathode chamber;

(c) an ion exchange membrane separating the cathode chamber from the anode chamber;

wherein the ion exchange membrane comprises a polymer having a substantially fluorinated backbone which has pendant groups attached directly to the backbone and represented by the formula

where

a=0–3

b=0–3

a+b=at least 1

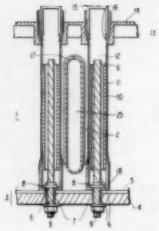
R_f' and R_f are independently selected from the group consisting of a halogen and a substantially fluorinated alkyl group having one or more carbon atoms

Y is hydrogen or alkali metal wherein the polymer has sulfonate ion exchange groups only, and has an equivalent weight of between about 800 and about 1500 and has a hydration product of less than 22,000.

4,417,970
ELECTROLYTIC CELL FOR ION EXCHANGE MEMBRANE METHOD

Kenzo Yamaguchi, Tokyo; Teruo Ichisaka; Tadao Ikegami, both of Tamano, and Isao Kumagai, Tokyo, all of Japan, assignors to Chlorine Engineers Corp. Ltd., Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,598
Claims priority, application Japan, Nov. 24, 1981, 56-186928
Int. Cl.³ C25B 9/00, 11/03, 13/02, 15/08
U.S. Cl. 204—257 5 Claims



1. An electrolytic cell for the ion exchange membrane method which comprises:

(a) an electrolytic cell main body;

(b) a plurality of porous and tubular cathodes disposed in the interior of the electrolytic cell main body;

(c) an electrolytic cell bottom plate having therein a plurality of apertures;

(d) a plurality of electrically conductive bars provided with a flange at a lower portion thereof, which are each inserted through the aperture of the electrolytic cell bottom plate into the interior of the electrolytic cell main body and secured to the electrolytic cell bottom plate by the flange;

(e) a plurality of porous anodes which are each connected to the electrically conductive bar and placed vertically in a face-to-face relationship to the cathode, and which are disposed alone or in combination with each other between the cathodes;

(f) a plurality of bag-shaped molds, at least the portions facing the anodes and the cathodes being formed by a cation exchange membrane, which are each provided at the bottom thereof with an aperture through which the electrically conductive bar can be passed, and are open at the top;

(g) a partition plate which is provided on the top of the electrolytic cell main body, and which has a plurality of openings at the positions corresponding to the top openings of the bag-shaped molds; and

(h) a plurality of lid members each of which covers an opening of the bag-shaped mold,

wherein

the bag-shaped mold accommodates one or more anodes;

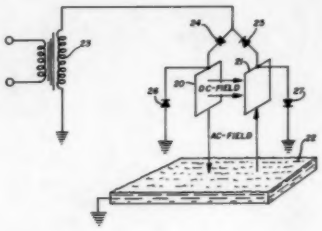
the bottom of the bag-shaped mold is secured to the electrolytic cell bottom plate together with the electrically conductive bar extending through the aperture of the bottom of the bag-shaped mold by the flange so that an anode compartment is defined inside the bag-shaped mold; and

the top opening edge of the bag-shaped mold is secured at the opening of the partition plate by the lid member.

4,417,971
CIRCUIT FOR MAINTAINING THE STRENGTH OF AN ELECTROSTATIC FIELD GENERATED IN A FLUID MIXTURE OF VARYING DIELECTRIC STRENGTH

Charles R. Ferrin, Sand Springs, and Floyd L. Prestridge, Mounds, both of Okla., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 30, 1981, Ser. No. 325,799
Int. Cl.³ B01D 17/06
U.S. Cl. 204—305 4 Claims



1. A system for coalescing droplets of a relatively polar liquid which are finely dispersed within a body of an immiscible relatively non-polar liquid, including,

at least two sources of DC voltage pulses,

a pair of electrodes spaced within a mixture of polar and non-polar immiscible liquids,

means for connecting the pair of electrodes and the DC voltage sources such that each of the electrodes has voltage pulses of one of the sources applied to it to generate an electrostatic field in which the polar liquid droplets will coalesce to a size which will cause their gravitation within the non-polar liquid,

means for forming a body of the coalesced and gravitated polar liquid droplets below the pair of electrodes,

and a rectifier connected between one of the electrodes and ground potential to maintain a differential of DC potential between the electrodes as the proportion of polar and non-polar immiscible liquids of the mixture changes to reduce the dielectric strength of their mixture.

4,417,972
RECOVERY OF COAL LIQUEFACTION CATALYSTS

James N. Francis, and Lavanga R Veluswamy, both of Houston, Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 4, 1981, Ser. No. 318,171
Int. Cl.³ C10G 1/08, 37/14, 31/00; B01J 37/00
U.S. Cl. 208—10 20 Claims

1. A process for the liquefaction of coal which comprises:

(a) contacting said coal under liquefaction conditions in a liquefaction zone with a hydrogen-containing gas and/or an added hydrocarbon solvent in the presence of a catalyst containing a metal capable of forming an acidic oxide to produce a liquefaction effluent, wherein said metal salt is introduced into said liquefaction zone in the form of a water-soluble or oil-soluble compound or by impregnation onto said coal;

(b) treating said liquefaction effluent to recover hydrocarbon liquids thereby producing a heavy bottoms containing carbonaceous material comprised of high molecular weight hydrocarbon liquids boiling above about 1000° F. and unconverted carbonaceous solids, insoluble catalyst residues containing said metal, and ash;

(c) burning said heavy bottoms in a combustion zone at a temperature below the fusion temperature of said ash to convert the insoluble metal-containing catalyst residues into soluble metal-containing oxides;

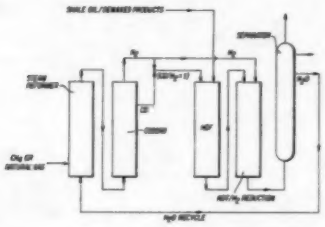
(d) withdrawing oxidized solids containing said soluble metal-containing oxides from said combustion zone;
(e) contacting said oxidized solids with an aqueous solution of a basic alkali metal salt thereby extracting said soluble metal-containing oxides from said oxidized solids in the form of soluble alkali metal salts of said metal-containing oxides; and
(f) recycling said soluble alkali metal salts of said metal-containing oxides to said liquefaction zone wherein said metal is reused as constituents of said catalyst.

4,417,973

UPGRADING OLEFINIC STOCKS VIA SEQUENTIAL HYDROFORMYLATION/HYDROGENATION

Philip J. Angevine, West Deptford, and Chiu T. Lam, Sewell, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,284
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—46 **11 Claims**



1. A sequential process for upgrading hydrocarbon stocks selected from the group consisting of shale oil, catalytically dewaxed product, coker liquids, pyrolysis gasoline, FCC light cycle oil or other olefinic feedstock which comprises contacting said feedstock initially in a reaction zone in the presence of a hydroformylation catalyst under hydroformylation reaction conditions with synthesis gas having a ratio of carbon monoxide to hydrogen of about 1:1 for a time sufficient for the conversion of the olefinic compounds contained therein into branched alkanols, thereafter passing the effluent from said hydroformylation zone to a reaction zone containing a suitable hydrotreating/reduction catalyst under hydrotreating/reduction reaction conditions converting said effluent into saturates and recovering directly a branched hydrocarbon product having lower pour point, higher V.I. and improved thermal stability.

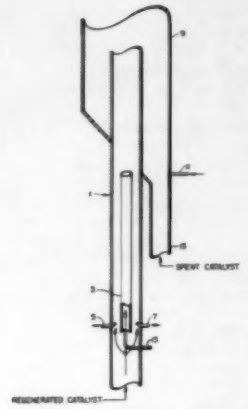
4,417,974

RISER CRACKING OF CATALYST-DEACTIVATING FEEDS

Willard M. Haunschild, Walnut Creek, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Aug. 23, 1982, Ser. No. 410,206
Int. Cl.³ C10G *11/18*
U.S. Cl. 208—75 **3 Claims**

1. In a process for cracking a hydrocarbonaceous feedstock containing a catalyst-deactivating component in the absence of externally supplied hydrogen in contact with an entrained bed of particulate acidic cracking catalyst flowing through a riser-reactor zone, the method for increasing conversion of said feedstock which comprises:
(a) maintaining first and second unmixed portions of said catalyst in separated entrained flow through an upstream part of said riser-reactor zone, said first portion having sufficient heat energy to substantially vaporize said feedstock;
(b) vaporizing and partially cracking said feedstock in contact with said first portion of said catalyst and decreasing the concentration of said catalyst-deactivating component in said vapor by depositing at least a portion of said catalyst-deactivating component on said first portion of said catalyst in said upstream part of said riser-reactor zone; and



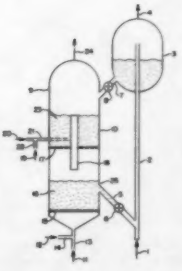
(c) mixing said second portion of said catalyst with the resulting hydrocarbonaceous vapor and cracking said hydrocarbonaceous vapor in a downstream part of said riser-reactor zone with said second portion of said catalyst.

4,417,975

ADDITION OF WATER TO REGENERATION AIR

George D. Myers, deceased, late of Ashland, Ky. by Virginia K. Myers, administratrix, and Lloyd E. Busch, Ashland, Ky., assignors to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 99,050, Nov. 30, 1980, abandoned, which is a continuation of Ser. No. 969,601, Dec. 14, 1978, abandoned. This application Apr. 3, 1981, Ser. No. 251,032
Int. Cl.³ C10G *11/05, 11/18*; B01J *29/38, 21/20*
U.S. Cl. 208—120 **70 Claims**



1. A process for economically converting carbo-metallic oils to lighter products, comprising:
I. providing a converter feed containing 650° F.± material, said 650° F.± material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s);
II bringing said converter feed together with particular cracking catalyst to form a stream comprising a suspen-

sion of said catalyst in said feed and causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a predetermined vapor riser residence time in the range of about 0.5 to about 10 seconds at a temperature of about 900° to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 6 to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;

III. separating spent, coke-laden catalyst from the stream of hydrocarbons formed by vaporized feed and resultant cracking products;

IV. maintaining a multistage regeneration zone comprising a sequence of separate dense fluidized beds, each of said beds containing catalyst undergoing regeneration with oxygen, said beds being positioned one above the other and arranged for downflow of catalyst from bed to bed through an internal transfer line countercurrent to upwardly flowing regeneration gas to the lowermost bed of catalyst being regenerated, each of said beds being further characterized by a bed density in the range of about 25 to about 50 pounds per cubic foot and by being sustained by a fluidization gas, including a combustion supporting gas containing said oxygen, said fluidization gas having a linear velocity in the range of about 0.2 to about 4 feet per second;

V. charging said spent catalyst to said uppermost bed of catalyst for downflow through said sequence of catalyst beds; supplying liquid water directly in contact with said catalyst in one or more of said catalyst beds, the weight ratio of the total weight of said water charged to said catalyst beds relative to the total weight of said converter feed charged to said progressive flow conversion zone being in the range of about 0.01 to about 0.5;

VI. retaining said spent catalyst in said multistage regeneration zone in contact with a flow of said oxygen containing combustion supporting gas under conditions of temperature, pressure and catalyst particle residence time in said multistage regeneration zone in the range of from about 5 minutes to about 30 minutes for combustion of said coke on said spent catalyst, whereby said spent catalyst is regenerated to have a level of residual carbon on said regenerated catalyst particles of about 0.25 wt% or less, while forming combustion product flue gases comprising CO and/or CO_2; and

VII. recycling the regenerated catalyst to the reactor for contact with fresh feed.

2. A process for economically converting carbo-metallic oils to lighter products, comprising:

I. providing a converter feed containing 650° F.+ material, and 650° F.+ material being characterized by a carbon residue on pyrolysis of at least about 1 and by containing at least about 4 parts per million of Nickel Equivalents of heavy metal(s);

II. bringing said converter feed together with particulate cracking catalyst to form a stream comprising a suspension of said catalyst in said feed and causing the resultant stream to flow through a progressive flow type reactor having an elongated reaction chamber which is at least in part vertical or inclined for a predetermined vapor riser residence time in the range of about 0.5 to about 10 seconds at a temperature of about 900° to about 1400° F. and under a pressure of about 10 to about 50 pounds per square inch absolute sufficient for causing a conversion per pass in the range of about 50% to about 90% while producing coke in amounts in the range of about 6 to about 14% by weight based on fresh feed, and laying down coke on the catalyst in amounts in the range of about 0.3 to about 3% by weight;

III. separating spent, coke-laden catalyst from the stream of hydrocarbons formed by vaporized feed and resultant cracking products;

IV. maintaining a multistage regeneration zone comprising a sequence of separate dense fluidized beds, each of said beds containing catalyst undergoing regeneration with oxygen, said beds being positioned one above the other and arranged for downflow of catalyst from bed to bed through an internal transfer line counter-current to upwardly flowing regeneration gas charged to the lowermost bed of catalyst being regenerated, each of said beds being further characterized by a bed density in the range of about 25 to about 50 pounds per cubic foot and by being sustained by a fluidization gas, including a combustion supporting gas containing said oxygen, said fluidization gas having a inear velocity in the range of about 0.2 to about 4 feet per second;

V. charging said spent catalyst to said uppermost bed of catalyst for downflow through said sequence of catalyst beds; supplying liquid water directly in contact with said catalyst in one or more of said catalyst beds, the weight ratio of the total amount of said water introduced to each of said catalyst beds relative to the total weight of oxygen consumed by combustion of coke during regeneration being in the range of about 0.035 to about 1.8

VI. retaining said spent catalyst in said multistage regeneration zone in contact with a flow of said oxygen containing combustion supporting gas under conditions of temperature, pressure and catalyst particle residence time in said multistage regeneration zone in the range of from about 5 to about 30 minutes for combustion of said coke on said spent catalyst whereby said spent catalyst is regenerated to have a level of residual carbon on said regenerated catalyst particles of about 0.25 wt% or less, while forming combustion product flue gases comprising CO and/or CO_2;

and

VII. recylcling the regenerated catalyst to the reactor for contact with fresh feed.

40. A process according to claim **1** or claim **2** wherein liquid water is supplied to one or more of said fluidized beds by discharging said water directly to said bed or beds.

41. A process according to claim **1** or claim **2** wherein the liquid water is supplied to said fluidized regeneration bed or beds by first mixing the liquid water with said combustion supporting gas and then introducing the resultant mixture into said bed or beds.

4,417,976

DEWATERING OF PETROLEUM-CONTAINING SLUDGES WITH RECOVERY OF THE OIL COMPONENT

Bruno Sander, Ludwigshafen; Friedrich Hovemann, Hockenheim, and Kurt Scherling, Hemsbach, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 22, 1981, Ser. No. 333,416

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1981, 3100899

Int. Cl.[3] **C10G** *17/00, 17/09, 33/04*

U.S. Cl. 208—188 **4 Claims**

1. A process for dewatering petroleum-containing sludges by a two-stage method using finely divided additives and organic flocculants which comprises:

(a) homogeneously dispersing in the petroleum-containing sludge finely divided additives selected from the group consisting of ash, coal, sand or mixtures of these, in a free-flowing form or as an aqueous suspension, in an amount such that the total solids content of the resulting mixtures is from 10 to 30% by weight,

(b) treating the sludge mixture with an aqueous solution of an organic flocculant,

(c) removing the greater part of the sludge water by gravity filtration,

(d) treating the pre-dewatered sludge with an aqueous solution of aluminum salts or trivalent iron salts and

(e) pressure filtering the resulting mixture from step (d) to separate the petroleum and water from the solids.

4,417,977

REMOVAL OF PCBS AND OTHER HALOGENATED ORGANIC COMPOUNDS FROM ORGANIC FLUIDS

Louis L. Pytlewski, Philadelphia, Pa.; Frank J. Iaconianni, Cherry Hill, N.J.; Kenneth Krevitz, Philadelphia, Pa., and Arthur B. Smith, Newark, Del., assignors to The Franklin Institute, Philadelphia, Pa.

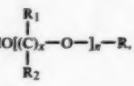
Filed Sep. 30, 1982, Ser. No. 429,096

Int. Cl.³ C07C *7/148, 39/12;* C10G *19/073, 29/06*

U.S. Cl. 208—262 **11 Claims**

1. A method for the removal of a halogenated organic compound from an organic fluid containing said compound, comprising the steps of:

(a) providing a reagent comprising the product of the reaction of a first reactant selected from the group consisting of an alkali metal or an alkali metal hydroxide, a second reactant having the general formula



wherein R is hydrogen or lower alkyl, R_1 and R_2 are the same or different and are selected from the group consisting of hydrogen, unsubstituted or substituted lower alkyl, unsubstituted or substituted cycloalkyl having from 5 to 8 carbon atoms, and unsubstituted or substituted aryl, n has a value from about 2 to about 400 and x has a value of at least 2, and oxygen as a third reactant;

(b) mixing said reagent with said fluid containing said halogenated compound in an inert atmosphere under reactive conditions to form a derivative of said halogenated organic compound having a reduced halogen content and a reagent residue, the reagent residue being substantially immiscible with said fluid, and said derivative being more soluble in said reagent residue than in said fluid;

(c) allowing said mixture to separate into a two-phase system comprising a reagent residue phase containing said derivative and a fluid phase substantially free of said halogenated compound; and

(d) separating said reagent residue phase from said fluid phase.

4,417,978

CENTRIFUGAL SCREENING DEVICE

Karl V. L. Guth, Estrada Velha de Araucaria Km 1, Na Cidade de Curitiba, no Estado do Parana, Brazil

PCT No. PCT/BR79/00001, § 371 Date Sep. 24, 1979, § 102(e) Date Sep. 24, 1979, PCT Pub. No. WO79/00547, PCT Pub. Date Aug. 23, 1979

PCT Filed Jan. 24, 1979, Ser. No. 287,537

Int. Cl.³ B07B *1/20*

U.S. Cl. 209—306 **14 Claims**

1. A centrifugal screening device for screening cereal produces comprising:

a cylindrical casing comprising upper and lower circular heads, a plurality of outer uprights extending between said heads and a plurality of arcuate casing sections fitting between said outer uprights and removably secured thereto by snap locks,

a cylindrical screen inside said cylindrical casing and spaced inwardly therefrom to provide a first annular zone therebetween, said cylindrical screen comprising a plurality of inner uprights extending between said heads and a plurality of arcuate screen sections fitting between said inner uprights and removably secured thereto by snap locks,

each of said screen sections comprising an arcuate frame and a parti-cylindrical sieve fitting in said frame and secured at its periphery to said frame by a flexible fabric strip absorbing vibration of said sieve, said fabric strip being protected from impact of the product by a metal strip secured on the internal face of said fabric strip in a manner to preserve flexibility of said fabric strip,

a central longitudinal shaft rotatably mounted axially of said cylindrical screen with a second annular zone between said shaft and said screen and with a product inlet at a lower end of said second annular zone and a product outlet at the upper end of said second annular zone, a

plurality of plates carried by and rotatable with said shaft, said plates being in said second annular zone and being inclined with respect to their plane of rotation so that the product being screened is thrown against said cylindrical screen by centrifugal force and is propelled longitudinally of said second annular zone from said inlet towards said outlet, finer particles of said product passing through said screen from said second annular zone to said first annular zone, and

funnel means at the bottom of said cylindrical casing for collecting and delivering product from said first annular zone.

4,417,979

PILE-UNLOADING DEVICE FOR PILED MOULDED ARTICLES

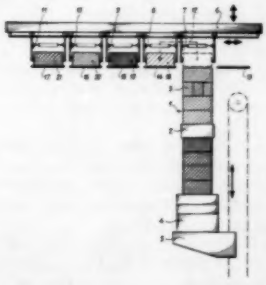
Bernardus T. Hofs, Holten, Netherlands, assignor to Machinefabriek Joh' Aberson B.V., Olst, Netherlands

Filed Aug. 19, 1981, Ser. No. 294,413

Claims priority, application Netherlands, Aug. 20, 1980, 8004714

Int. Cl.³ B65G *47/90*

U.S. Cl. 209—617 **7 Claims**



1. A pile-unloading device for pileable moulded articles such as bricks, with grasping means to grasp moulded articles from the upper row of a pile and to displace them with respect thereto, characterized in that, above supporting means for the pile, there are sets of grasping means one to the side of the

other as seen in a plane substantially perpendicularly to the main vertical plane of the pile, said grasping means being connected to a common structure adapted to move said grasping means simultaneously in a substantially rectangular path in a vertical plane extending transversely to the main vertical plane of the pile, each set of grasping means comprising a multitude of grasping means one to the side of the other, as seen in a horizontal direction parallel to the pile, there being parts with take-up surfaces below said grasping means, movable substantially perpendicular to said vertical plane of movement of said grasping means, that the common structure to which the grasping means are connected is movable to move the grasping means in said vertical plane over a horizontal distance equal to the distance between the centres of two adjacent take-up surfaces and of two adjacent sets of grasping means and that at least those sets of grasping means, which do not take up a position right above the pile in part of their moving path, are operable separately in smaller numbers than the entire number in their set to take up moulded articles selectively from one take-up surface to put them onto an adjacent take-up surface.

4,417,980

FILTRATION APPARATUS

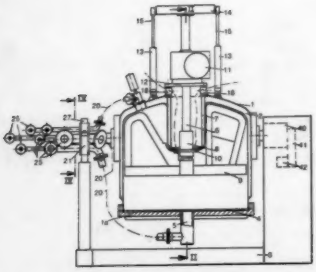
Rolf Baur, Lautern, and Wolfgang Diemer, Waldstetten, both of Fed. Rep. of Germany, assignors to Schenk Filterbau GmbH, Waldstetten, Fed. Rep. of Germany

Filed Jun. 8, 1981, Ser. No. 271,716

Claims priority, application Fed. Rep. of Germany, Jun. 18, 1980, 3022644; Jun. 18, 1980, 3022658

Int. Cl.³ B01D *29/02*

U.S. Cl. 210—91 **15 Claims**



1. Filtration apparatus comprising in combination:

a container having inlet and outlet means, and a liquid permeable filter bottom situated between said inlet and outlet means;

mixing means including a power shaft extending into said container from a side opposite said bottom and carrying a mixing implement in the container, a drive for said power shaft and a lifting mechanism for axially displacing said power shaft;

a supporting frame;

means for tiltably mounting said container, including a support bearing at one side of said container and said frame, including several roller elements and an inner roller engaged by said roller elements, said inner roller having spaced-apart apertures; and

conduits leading through said spaced-apart apertures in said inner roller to and from said container for angular movement therewith.

4,417,981

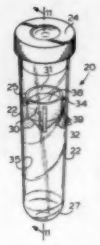
BLOOD PHASE SEPARATOR DEVICE

Edward L. Nugent, North Caldwell, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed May 4, 1981, Ser. No. 260,530

Int. Cl.³ B01D *21/26*

U.S. Cl. 210—209 **14 Claims**



1. A blood collection device for receiving a sample of whole blood adapted to be centrifuged into a phase of lighter specific gravity and a phase of heavier specific gravity comprising:

a collection container having an open end and a closed end;

a stopper in said open end sealing same closed and being penetrable by a needle for delivering blood to said container;

a separator assembly positioned inside said container intermediate said open and closed ends adapted to move along a longitudinal axis therein and including a receptacle with a thixotropic barrier material in said receptacle, said receptacle having an aperture facing said closed end of the container, the size of said aperture and the viscosity of said thixotropic barrier material cooperating to prevent said barrier material from flowing out of said aperture under normal gravity conditions; said separator assembly having a specific gravity greater than the specific gravity of the heavier blood phase and adapted to move toward said closed end during centrifugation of said device, said barrier material having a specific gravity intermediate the specific gravities of the lighter and heavier phases of blood and adapted to flow under its own influence through said aperture during centrifugation of said device, travel to a position intermediate the lighter and heavier phases of blood separated during centrifugation and adhere to the inside wall of said container to form a barrier between said phases to maintain the separation therebetween; and

said receptacle having a smaller transverse dimension than the inside wall of said container to provide annular clearance therebetween for blood passage toward the closed end of said container during the blood collection procedure and for the passage of barrier material toward the interface of the phases separated during centrifugation.

5. The device of claim **1** wherein said assembly further includes a removable blood clotting activator at least on its surfaces bordering the annular clearance so that whole blood contacting said activator during passage through said clearance picks up said activator and rapid blood clotting is induced.

4,417,982
DEVICE FOR THE DEWATERING OF NATURALLY MOIST LUMP PEAT

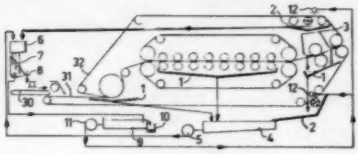
Hugo Britschgi, Stalden; Bruno Portmann, Emmenbrücke, and Louis Berchtold, Horw, all of Switzerland, assignors to Bell Maschinenfabrik Aktiengesellschaft, Kriens, Switzerland

Filed Sep. 28, 1982, Ser. No. 425,580

Claims priority, application Switzerland, Nov. 13, 1981, 7301/81

Int. Cl.³ B30B *9/24*; B01D *33/14*

U.S. Cl. 210—386 **6 Claims**



1. A wire press machine comprising elements designed, arranged and dimensioned for dewatering moist lump peat in the naturally obtained state and without flocculation agents including an inlet section for fresh moist peat which leads that material to moving press screens between which the peat is squeezed to yield a filtrate; washing means for applying water to the screens to repeatedly clean them; duct means to collect the filtrate from the press screens and the used wash water; static filter means connected to receive the liquid collected by the duct means and to separate it into a peat fines fraction and an essentially particle-free water fraction; means for guiding the peat fines fraction to the inlet section and mixing it with the incoming fresh moist peat; means for leading a portion of the water fraction to the washing means; and means for discharging the remaining, surplus portion of the water fraction.

4,417,983
SCRAPER APPARATUS FOR SETTLING BASINS AND THE LIKE

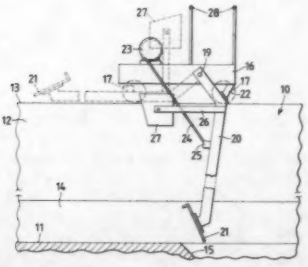
Rudolf Smigerski, Aarbergen; Rosemarie Dörner, Heidenrod, and Peter Schmidt, Hohenstein-Holzhausen, all of Fed. Rep. of Germany, assignors to Passavant-Werke AG & Co. KG, Fed. Rep. of Germany

Filed Mar. 20, 1981, Ser. No. 245,731

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011752

Int. Cl.³ B01D *21/04*

U.S. Cl. 210—527 **6 Claims**



1. Scraper apparatus for settling basins and the like comprising a bridge transportable above the basin, a pivot arm pivotally connected adjacent one end to said bridge with a scraper blade mounted at the other end thereof for upward and rearward pivotal movement within said basin, and loading means operatively connected to said pivot arm for generating a return force which increases during the initial upward and rearward pivoting of the scraper blade an angular distance of approximately 20° to 45° to load the scraper blade into the scraping position and then decreases.

4,417,984
METHOD AND DEVICE FOR TREATING FLUIDS WITH MAGNETIC LINES OF FORCE

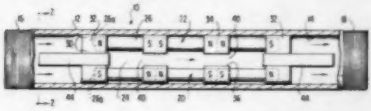
James R. O'Meara, Jr., P.O. Box 58170-MS-888, Houston, Tex. 77058

Continuation-in-part of Ser. No. 151,864, May 21, 1980, Pat. No. 4,289,621. This application Sep. 14, 1981, Ser. No. 301,696

The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.

Int. Cl.³ C02B *1/48*

U.S. Cl. 210—695 **17 Claims**



1. A device for the treatment of fluids with magnetic lines of force comprising:

an elongated hollow outer casing having a longitudinal axis and fluid inlet and outlet means at the longitudinal ends thereof;

at least two spaced-apart and longitudinally coextensive elongated magnet assemblies, each positioned within said outer casing and having a longitudinal axis substantially parallel with that of adjacent magnet assemblies and with the longitudinal axis of said outer casing to form at least one elongated laminar passageway for said fluid therebetween;

each of said magnet assemblies comprising at least one tier of at least two permanent magnets, each magnet being magnetized along its longitudinal axis and arranged in a coaxial line with the other magnet or magnets in the same tier with like polar ends of said magnets adjacent each other;

each of said tiers having one end supported by an inlet end support member and its other end supported by an outlet end support member, the length of each tier of magnets being supported between its ends by means associated with said end support members;

said magnet assemblies being positioned so that the polarities of adjacent polar ends of magnets in one of said magnet assemblies are unlike the polarities of the oppositely disposed adjacent polar ends of magnets in a spaced-apart magnet assembly, thereby providing at least three concentrated flux lines of magnetic force and adjacent flux lines of reversed polarity in each said passageway; and

means for fixedly positioning said magnet assemblies within said outer casing.

17. A method for the treatment of a fluid with magnetic lines of force which comprises directing said fluid through at least one passageway defined by spaced-apart and longitudinally coextensive magnet assemblies each comprising at least one tier of at least two permanent magnets magnetized along the longitudinal axis thereof and arranged in coaxial line with like poles adjacent each other, said magnet assemblies being positioned so that the polarities of adjacent polar ends of magnets in one of said magnet assemblies are unlike the polarities of the oppositely disposed polar ends of magnets in a spaced-apart magnet assembly, thereby treating said fluid with at least three concentrated flux lines of force and adjacent flux lines of reverse polarity in each said passageway.

4,417,985

TREATMENT OF WATERS WITH BROAD SPECTRUM CONTAMINANTS

James Keane, 23, S. Harlan St., York, Pa. 17402

Filed Nov. 6, 1981, Ser. No. 318,820
Int. Cl.³ C02F *1/54*
U.S. Cl. 210—707 **98 Claims**

1. A composition for the direct nucleation of materials which are dissolved or suspended in a hydrogen-bonded liquid, which comprises a discontinuous phase of gas in the form of surfactant-stabilized spherical bubbles having a narrowly distributed size in the range of from about 12 to about 100 microns and a half-life of at least about 2 minutes, each said gas bubble being encapsulated in a double surfaced hydration layer containing said hydrogen-bonded liquid and a soluble surfactant having a HLB ratio greater than about 10, said encapsulated gas bubbles being dispersed in a continuous phase of said hydrogen-bonded liquid and each having an outer surface layer of collector ions movably held to said hydration layer of Coulomb forces and active to react with said materials, said surfactant being present in an amount up to about 3 times critical micelle concentration so as to stabilize said bubbles and impart to said hydration layer sufficient thickness and viscosity to retard migration of said collector ions through said hydration layer for a period of time sufficient to enable said collector ions to react with said materials and cause nucleation thereof directly at said surface layers of said bubbles, whereby when said composition is turbulently mixed with said hydrogen-bonded liquid containing said materials dissolved or suspended therein, the reaction between said collector ions and said materials causes said bubbles to rupture and to release their entrapped gas as naked gas bubbles and forms an insoluble reaction product, said ruptured bubbles exposing the surfactant contained in the respective hydration layer thereof for reaction with any unreacted collector ions to form a further insoluble reaction product, any unreacted bubbles also rupturing in time as a result of said collector ions having migrated through the respective hydration layer thereof and reacted with said surfactant to form said further insoluble reaction product, both said insoluble reaction product and said further insoluble reaction product forming a recoverable agglomerated material.

4,417,986

PROCESS FOR REDUCING THE CHEMICAL OXYGEN DEMAND OF SPENT ALKALINE REAGENTS

Ruth M. Connaught, Turnersville, N.J.; Vernon F. Coty, West Chester, Pa., and Michael Sedlak, West Deptford, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 13, 1981, Ser. No. 243,310
Int. Cl.³ C10G *19/00, 19/08, 27/12*
U.S. Cl. 210—759 **11 Claims**

1. A process for significantly reducing the chemical oxygen demand of an aqueous solution of spent alkaline reagent containing alkali metal mercaptide resulting from the treatment of mercaptan-containing hydrocarbon fluid with alkali metal hydroxide which consists essentially of contacting the spent alkaline reagent solution with hydrogen peroxide at ambient pressure and temperature to convert at least about 50 weight percent of the total spent alkaline reagent originally present to alkali metal sulfate and alkali metal carbonate.

4,417,987

PROCESS FOR DETOXIFICATION

Anthony P. Harrison, Rochdale, England, assignor to Interox Chemicals Limited, London, England

Filed Dec. 7, 1981, Ser. No. 328,109
Claims priority, application United Kingdom, Dec. 12, 1980, 8039829
Int. Cl.³ C02F *1/72*
U.S. Cl. 210—759 **17 Claims**

1. In a process for the detoxification of an aqueous alkaline solution of a metal cyanide complex by introduction thereinto of hydrogen peroxide, the improvement wherein detoxification is effected in the presence of a complexing agent in a mole ratio to metal in the metal cyanide of from 0.5:1 to 3:1, said complexing agent being one which can form with nickel cyanide a mixed ligand complex having a stability constant β_{12} of not greater than 9.5, said stability constant β_{12} being expressed as a logarithm to the base 10 for the dissociation reaction

$$NiL(CN)_2^{n-} \rightleftarrows NiL^{2-n} + 2CN^-$$

wherein L represents a molecule of the complexing agent and wherein

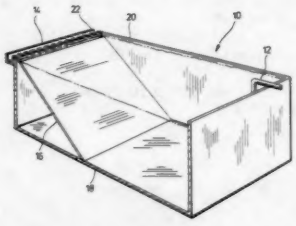
$$\beta_{12} = \frac{[NiL(CN)_2^{n-}]}{[NiL^{2-n}][CN^-]^2}.$$

4,417,988

METHOD FOR IMPROVING SOLIDS REMOVAL IN CLARIFIERS

Jesus F. Cordoba-Molina, Div. de Fuentes de Energia, Inst. de Investigaciones Elec., Interior Internado Palmira, Apartada Postal 475, Cuernavaca, Morelos, Mexico; Robert R. Hudgins, 196 Bellehaven Ave., and Peter L. Silveston, 121 Allen St., both of Waterloo, Ontario, Canada

Filed May 26, 1981, Ser. No. 266,733
Int. Cl.³ B01D *21/00*
U.S. Cl. 210—801 **7 Claims**



1. A method of improving the settleability of a suspension of solid particles in water flowing through a settling zone from an inlet thereto to an outlet therefrom, which comprises:

flowing a suspension of solid particles in water through said settling zone from said inlet thereto towards said outlet thereof at a flow rate which permits settling of said solid particles in said settling zone, and

decreasing the effective depth of said settling zone towards said outlet to effect acceleration of the flow of said suspension towards said outlet to achieve a densimetric Froude number of the suspension of at least $0.1/\pi$ at the point of maximum velocity of said suspension and minimum volume of said settling zone,

said densimetric Froude number (F) being determined by the relationship:

$$F = \frac{V}{\sqrt{(g\Delta\rho/\rho)h}}$$

wherein V is the horizontal velocity of liquid at a point in the settling zone and h is the depth of liquid in the settling zone at the same point, g is the acceleration due to gravity, $\Delta\rho$ is the density difference between that of the feed to and that of the overflow from the settling zone and ρ is the average density of said suspension in said settling zone.

4,417,989

PROPPING AGENT FOR FRACTURING FLUIDS

Walter D. Hunter, Houston, Tex., assignor to Texaco Development Corp., White Plains, N.Y.

Division of Ser. No. 142,550, Apr. 21, 1980, Pat. No. 4,326,969, which is a continuation-in-part of Ser. No. 953,375, Oct. 23, 1978, abandoned. This application Aug. 3, 1981, Ser. No. 289,559

Int. Cl.³ E21B *43/26, 43/267*

U.S. Cl. 252—8.55 R **2 Claims**

1. A composition for use in fracturing fluids comprising sand grains having a Tyler mesh site of about 8 to about 40 coated with a thin film of polyacrylamide or partially hydrolyzed polyacrylamide of number average molecular weight from about 500,000 to about 2,000,000 alkoxylated with about 20 to about 100 weight percent of a material selected from the group consisting of propylene oxide and a mixture of propylene oxide and ethylene oxide wherein the weight percent of propylene oxide in the said mixture is about 65 to 95, wherein in the partially hydrolyzed polyacrylamide from 12 to 67 mole percent of the original carboxamide groups are hydrolyzed, said alkoxylated polyacrylamide or partially hydrolyzed polyacrylamide being water insoluble.

4,417,990

MIXED METAL SALTS/SULFURIZED PHENATE COMPOSITIONS AND LUBRICANTS AND FUNCTIONAL FLUIDS CONTAINING THEM

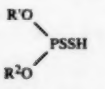
Donald L. Clason, Mentor, and Calvin W. Schroeck, Eastlake, both of Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 205,095, Nov. 7, 1980, Pat. No. 4,308,154, which is a continuation of Ser. No. 44,286, May 31, 1979, abandoned. This application Dec. 24, 1981, Ser. No. 334,251

Int. Cl.³ C10M *1/48*

U.S. Cl. 252—32.7 E **35 Claims**

1. A composition comprising (A) a mixed metal salt of (A)(I) at least one acid of formula I



I

wherein R′ and R^2 are the same or different and each of R′ and R^2 is a hydrocarbon-based radical, and (A)(II) at least one aliphatic or alicyclic carboxylic acid containing from about 2 to about 40 carbon atoms; the ratio of equivalents of (A)(I) to (A)(II) being in the range of about 0.5:1 and about 400:1, and (B) at least one sulfurized Group II metal phenate; the weight ratio of (A) to (B) being in the range of about 40:1 to about 1:2.

4,417,991

GRAPHITED GEAR OILS

Dominic A. Apikos, Crown Point, Ind., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Sep. 15, 1982, Ser. No. 418,135

Int. Cl.³ C10M *1/10, 1/28*

U.S. Cl. 252—29 **4 Claims**

1. An energy efficient lubricating composition suitable for lubricating gears comprising:

(a) about 60% to about 85% by weight of a base oil;

(b) about 0.5% to about 5.0% by weight of graphite particles wherein at least 90% by weight of said particles, based upon the total weight of said particles, is no greater than one micron in particle size;

(c) an effective dispersant amount of an ethylene-propylene copolymer grafted with a nitrogen-containing vinyl functionality selected from the group consisting of an N-vinyl pyrrolidone and a C-vinyl pyridine.

(d) about 4% to about 10% by weight of a sulfur- and phosphorus-containing EP additive; wherein the percent by weight of all components added together equals 100%.

4,417,992

DUST CONTROL

Bhupati R. Bhattacharyya, Downers Grove, and William J. Roe, Aurora, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Continuation-in-part of Ser. No. 288,665, Jul. 30, 1981. This application Dec. 13, 1982, Ser. No. 449,434

Int. Cl.³ C09K *11/02*

U.S. Cl. 252—88 **14 Claims**

1. A method of controlling dust on roads, in mines, on mineral and/or tailings piles or impoundments, controlling dust and wind erosion from surfaces of pulverized coal and mineral piles contained within open transit cars such as coal cars or trucks, and on other surfaces containing coal particles, rock dust, clay, soil particles and other finely divided particles subject to dusting, which comprises applying thereto a dust inhibiting amount of a liquid dispersion of watery consistency of a highly branched water swellable polymer of acrylamide or an acrylamide-acrylic acid copolymer, cross-linked with a multifunctional unsaturated monomer containing more than one ethylenically unsaturated group, said cross-linked polymer or copolymer having a three-dimensional structure and being in the form of microgelatinous particles, having an average particle size not exceeding approximately one micron in an oil continuous emulsion form, and having the property of allaying such dust.

4,417,993

CLEANSING TABLETS FOR TOOTH PROSTHESES

Gerhard Gergely, Gartengasse 8, A-1053 Vienna, Austria

Filed Oct. 20, 1980, Ser. No. 198,413

Claims priority, application Austria, Oct. 30, 1979, 7005/79

Int. Cl.³ C11D *7/08, 7/12, 7/18, 17/00*

U.S. Cl. 252—90 **5 Claims**

1. An effervescent cleansing tablet for a dental prosthesis comprising a faster dissolving acidic component which is a mixture of sodium bicarbonate, potassium persulfate, sulfamic acid, and citric acid, and

a slower-dissolving alkaline component which is a mixture of sodium carbonate and magnesium hydroxycarbonate, said alkaline component present in stoichiometric excess within the tablet, said tablet providing an initial acidic pH in solution while effervescing and gradually adjusting to an alkaline pH.

4. A process for preparing an effervescent cleansing tablet for a dental prosthesis, comprising a distinct, faster-dissolving acidic layer and a distinct, slower-dissolving alkaline layer, which comprises the steps of

(A) preparing a mixture of sulfamic acid, sodium bicarbonate, sodium carbonate, sodium persulfate, polyethylene

glycol and a surface active substance, forming the faster-dissolving acidic component,

(B) pre-pressing this acidic component (A) in a table press,

(C) preparing a mixture of sodium carbonate, sodium pyrophosphate, potassium persulfate, a surface active substance, and a partial glyceride of a straight-chain vegetable fatty acid of eight to twelve carbon atoms in length, forming the slower-dissolving alkaline component,

(D) depositing said alkaline component (C) onto the pre-pressed acidic component (B), and

(E) pressing said two components (D) in a tablet press.

4,417,994
PARTICULATE DETERGENT ADDITIVE COMPOSITIONS

Barry Stoddart, Newcastle upon Tyne, England, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jan. 20, 1982, Ser. No. 340,954

Claims priority, application United Kingdom, Jan. 24, 1981, 8102221

Int. Cl.³ C11D *3/06, 7/56*

U.S. Cl. 252—135 **22 Claims**

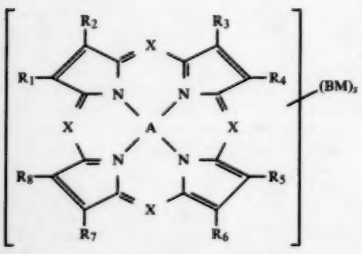
1. A detergent additive composition in particulate form comprising:

(a) a storage-sensitive detergent additive material releasably enclosed within

(b) a water-soluble glassy matrix of amorphous phosphate having the general formula I:

$$(M_2O)_x(P_2O_5)_y \quad \text{I}$$

wherein M is selected from the group consisting of hydrogen, alkali metal, ammonium and substituted ammonium groups, y has a value in the range from 2 to 50, and the ratio x:y is from 0.7:1 to 1.7:1; wherein said storage sensitive detergent additive material is a multifunctional photoactivator/dye which is a porphine having the general formula II:



II

wherein each X is (=N—) or (=CY—), and the total number of (=N—) groups is 0, 1, 2, 3 or 4; wherein each Y, independently, is hydrogen or meso substituted alkyl, cycloalkyl, aralkyl, aryl, alkaryl or heteroaryl; wherein each R, independently, is hydrogen or pyrrole substituted alkyl, cycloalkyl, aralkyl, aryl, alkaryl or heteroraryl, or wherein adjacent pairs of R's are joined together with ortho-arylene groups to form pyrrole substituted alicyclic or heterocyclic rings; wherein A is 2(H) atoms bonded to diagonally opposite nitrogen atoms, or Zn(II), Cd(II), Mg(II), Ca(II), Al(III), Sc(III), or Sn(IV); wherein B is an anionic, nonionic or cationic solubilizing group substituted into Y or R; wherein M is a counterion to the solubilizing groups; and wherein s is the number of solubilizing groups; wherein, when B is cationic, M is an anion and s is from 1 to 8; when B is nonionic, B is polyethoxylate, M is zero, s is from 1 to 8, and the number of condensed ethylene oxide molecules per porphine molecule is from 8 to 50; when B is anionic and proximate, M is cationic and s is from 3 to 8; when B is anionic and remote, M is cationic and s is from 2 to 8; and when B is sulphonate the number of sulphonate groups is no greater than the number of aromatic and heterocyclic substituent groups.

4,417,995
FABRIC CONDITIONING COMPOSITION

Alexander Lips, Pavenham; Martin A. Wells, Wirral, and Edwin Willis, Bromborough, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Apr. 19, 1982, Ser. No. 369,879

Claims priority, application United Kingdom, Apr. 21, 1981, 8112392

Int. Cl.³ D06M *15/08*

U.S. Cl. 252—174.23 **10 Claims**

1. A fabric conditioning composition in liquid form comprising from about 0.5% to about 60% by weight of a fabric conditioning agent which includes at least one cationic fabric softening material, characterized in that the composition further comprises from about 0.1% to about 8% by weight of an inorganic polymeric material capable of precipitating a metal hydroxide or hydrated oxide at a pH of about 7.5 or less in water, the weight ratio of the fabric conditioning agent to the inorganic polymeric material being at least about 1.5:1.

4,417,996
AQUEOUS BASIC POLYALUMINUM-IRON HALIDE SOLUTIONS

Vincent H. S. Kuo, Liverpool, and Christian A. Wamser, Camillus, both of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 218,984, Dec. 22, 1980, Pat. No. 4,362,643, which is a continuation of Ser. No. 55,416, Jul. 6, 1979, abandoned. This application Sep. 16, 1982, Ser. No. 418,879

Int. Cl.³ C01F *7/56*; C01G *49/10*; C02B *1/20*

U.S. Cl. 252—175 **4 Claims**

1. A method of preparing an aqueous basic polyaluminum-iron halide solution containing a concentration of metal ions ranging form about 1.35 to 4.5 mol/liter as a dissolved salt of the formula

$$Al_{1-x}Fe_x^{III}Fe_y^{II}(OH)_{3+2y-z}Hal_z$$

wherein Hal is chlorine, bromine, iodine or mixtures thereof; $(x+y)/(1-x)$ is 0.2 to 1.5 $(3+2y-z)/(3+2y)$ is 0.24 to 0.67; z is less than $3+2y$; and wherein x/y is about 0 to 1 by mixing a polyaluminum halide solution with one or more members of the group consisting of ferrous halide and ferric halide.

3. A method of preparing an aqueous basic polyaluminum-iron halide solution containing a concentration of metal ions ranging from about 1.35 to 4.5 mol/liter as a dissolved salt of the formula

$$Al_{1-x}Fe_x^{III}Fe_y^{II}(OH)_{3+2y-z}Hal_z$$

wherein Hal is chlorine, bromine, iodine or mixtures thereof; $(x+y)/(1-x)$ is 0.2 to 1.5; $(3+2y-z)/(3+2y)$ is 0.24 to 0.67; z is less than $3+2y$; and wherein x/y is about 0 to 1 which comprises reacting an aqueous aluminum halide solution or aqueous low basic polyaluminum halide solution with metallic iron.

4,417,997

METHOD FOR RECOVERY OF METALS FROM SPENT IRON-CHROME SHIFT CATALYST AND METHOD OF FORMING NEW CATALYST

James R. Jennings, Yarm, England, and George N. Pessimisis, Westchester, Ill., assignors to Katalco Corp., Oak Brook, Ill. and Imperial Chemical Industries Limited, London, England, a part interest

Filed May 24, 1982, Ser. No. 380,979
Int. Cl.[3] C09K *3/00*
U.S. Cl. 252—182 7 Claims

2. A method of making a solution of the nitrates of iron and chromium from a spent catalyst containing oxides of iron and chromium which method comprises:

(a) dissolving the spent catalyst incompletely in nitric acid;
(b) separating the resulting solution of the nitrates of iron and chromium from the nitric acid insoluble residue containing undissolved iron and chromium components;
(c) dissolving the nitric acid insoluble residue in sulphuric acid to obtain a solution of metal sulphates;
(d) reacting the metal sulphates solution with a source of nitrate ions and of cations of which the sulphate is of low solubility, so as to prepare a solution of the nitrates of iron and chromium and an insoluble sulphate precipitate;
(e) separating the insoluble sulphate precipitate from the solution of the metal nitrates; and then,
(f) combining the solution of the nitrates of iron and chromium of step b with the solution of the metal nitrate of step e to recover a solution of the nitrates of iron and chromium from said spent catalyst.

4,417,998

POLYURETHANE FOAMS AND PROCESSES FOR PREPARATION

Richard B. Kennedy, Ridgefield, Conn., assignor to Patrick James Crehan and Richard J. Fricke, both of Ridgefield, Conn.

Division of Ser. No. 443,878, Nov. 23, 1983, which is a continuation-in-part of Ser. No. 328,686, Dec. 8, 1981. This application May 20, 1983, Ser. No. 496,418
Int. Cl.[3] H01J *7/18*
U.S. Cl. 252—182 9 Claims

1. A mixture useful for the preparation of polyurethane foams comprising an untreated carbohydrate in which substantially all of the hydroxyl groups are free, water and a polyurethane producing catalyst.

4,417,999

FREE FLOWING ANTISTATIC COMPOSITION

James P. Duffy, Memphis, Tenn., assignor to Witco Chemical Corporation, New York, N.Y.

Filed Jun. 3, 1982, Ser. No. 384,444
Int. Cl.[3] C08L *3/36, 5/17*
U.S. Cl. 252—383 16 Claims

1. A particulate free flowing antistatic composition for a polymer comprising an ethoxylated alkyl amine and silicon dioxide particulates.

11. A method of making a solid free flowing antistatic composition comprising spraying an ethoxylated amine to form a powder and mixing with silicon dioxide particulates so as to form a free flowing powder.

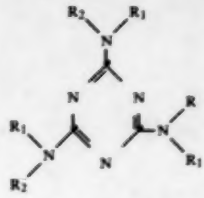
4,418,000

MELAMINE GROUP CONTAINING ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS

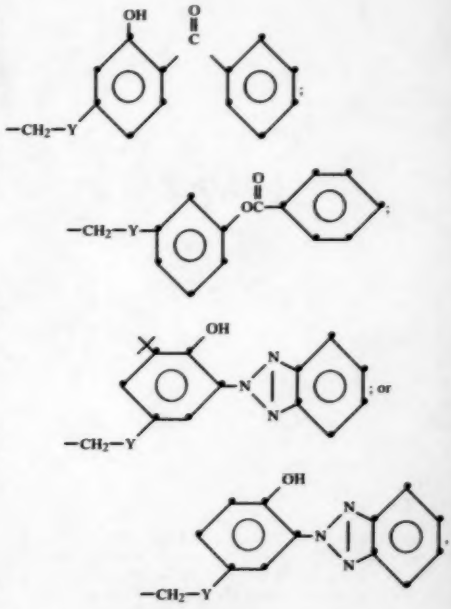
Joseph S. Zannucci, and Wayne P. Pruett, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Sep. 1, 1982, Ser. No. 413,901
Int. Cl.[3] C09K *15/20;* C08K *5/16*
U.S. Cl. 252—403 82 Claims

1. An organic composition susceptible to ultraviolet degradation stabilized against such degradation with a stabilizing amount of a compound having the formula:



wherein R is a member selected from the group consisting of:



R_1 is a member selected from the group consisting of —CH_2OH and —CH_2OX where X is a branched or unbranched alkyl group containing 1 to 18 carbon atoms,

R_2 is the same as R or R_1, and

Y is an oxy group, an oxy alkyl oxy group, or an oxy alkyl carbonyl group, wherein said alkyl member is a branched or unbranched alkyl group containing 1 to 10 carbon atoms.

4,418,001

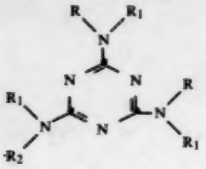
MELAMINE GROUP CONTAINING ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS III

Joseph S. Zannucci, and Wayne P. Pruett, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

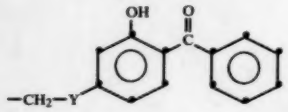
Filed Sep. 1, 1982, Ser. No. 413,902
Int. Cl.[3] C09K *15/20;* C08K *5/16*
U.S. Cl. 252—403 30 Claims

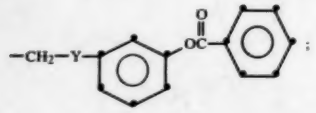
1. An organic composition susceptible to ultraviolet degra-

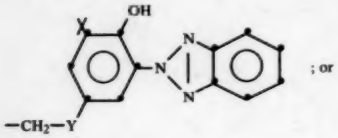
dation stabilized against such degradation with a stabilizing amount of a compound having the formula:

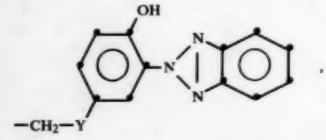


wherein R is a member selected from the group consisting of:



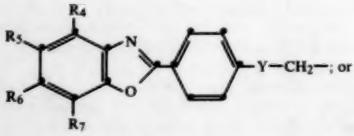


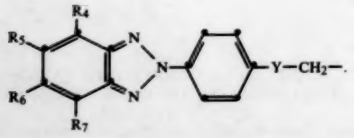




R_1 is a member selected from the group consisting of —CH_2OH and —CH_2OX where X is a branched or unbranched alkyl group containing 1 to 18 carbon atoms,

R_2 is a member selected from the group consisting of:





R_4, R_5, R_6 and R_7 can be hydrogen, lower branched or unbranched alkyl group containing 1 to 12 carbon atoms, an alkoxy containing 1 to 12 carbon atoms or chloro, and

Y is an oxy group, an alkyl oxy group, an oxy alkyl oxy group, a carbonyl oxy group, or an oxy alkyl carbonyl group, wherein said alkyl member is a branched or unbranched alkyl group containing 1 to 4 carbon atoms.

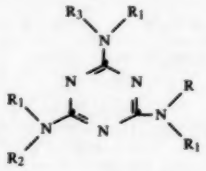
4,418,002

MELAMINE GROUP CONTAINING ULTRAVIOLET STABILIZERS AND THEIR USE IN ORGANIC COMPOSITIONS II

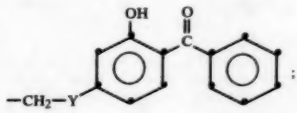
Joseph S. Zannucci, and Wayne P. Pruett, both of Kingsport, Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

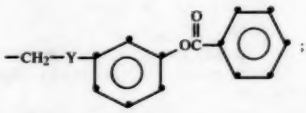
Filed Sep. 1, 1982, Ser. No. 413,907
Int. Cl.[3] **C09K** *15/20*; **C08K** *5/16*
U.S. Cl. 252—403 **37 Claims**

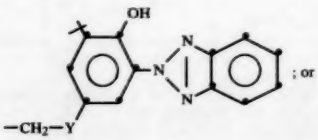
1. An organic composition susceptible to ultraviolet degradation stabilized against such degradation with a stabilizing amount of a compound having the formula:

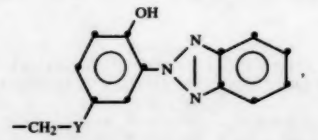


wherein R is a member selected from the group consisting of:



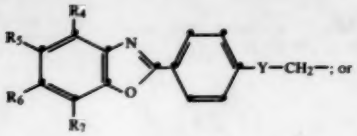


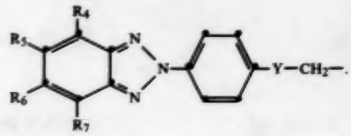




R_1 is a member selected from the group consisting of —CH_2OH and —CH_2OX where X is a branched or unbranched alkyl group containing 1 to 18 carbon atoms,

R_2 is a member selected from the group consisting of:





R_3 is the same as R_1 or R_2;

R_4, R_5, R_6 and R_7 can be hydrogen, lower branched or unbranched alkyl group containing 1 to 12 carbon atoms, an alkoxy containing 1 to 12 carbon atoms or chloro, and

Y is an oxy group, an alkyl oxy group, an oxy alkyl oxy group, a carbonyl oxy group, or an oxy alkyl carbonyl group, wherein said alkyl member is a branched or unbranched alkyl group containing 1 to 4 carbon atoms.

4,418,003

CATALYSTS FOR THE PRODUCTION OF MALEIC ANHYDRIDE

Carl A. Udovich, Joliet, and William S. Eryman, Bolingbrook, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed May 26, 1982, Ser. No. 382,182
Int. Cl.³ B01J *27/14*
U.S. Cl. 502—209 **31 Claims**

1. A process for the manufacture of a phosphorus vanadium catalyst suitable for use in the manufacture of maleic anhydride from butane which process comprises reacting P_2O_5 in an aliphatic alcohol having about 1 to about 8 carbon atoms to produce mixed phosphate esters and reacting a vanadium compound with an inorganic acid in the aliphatic alcohol to produce acidified alcohol and a vanadium ester and using these to produce a vanadium phosphorus oxide catalyst which is dissolved in the acidified alcohol.

4,418,004

CATALYSTS FOR GASEOUS PHASE FLUORINATION OF ALIPHATIC CHLORINATED AND CHLOROFLUORINATED DERIVATIVES

Louis Foulletier, Oullins, France, assignor to PCUK Produits Chimiques Ugine Kuhlmann, Courbevoie, France

Filed Nov. 24, 1981, Ser. No. 324,439
Claims priority, application France, Dec. 29, 1980, 80 27660
Int. Cl.³ B01J *27/02*
U.S. Cl. 502—182 **5 Claims**

1. A catalyst comprising active carbon impregnated with chromium sulfate, wherein the active carbon comprises:

(a) a specific surface area greater than about 1000 m^2/g, but less than about 2000 m^2/g

(b) a surface area of pores of 40 to 50 Å in radius which is greater than about 5 m^2/g, but less than about 15 m^2/g

(c) a surface area of pores equal to or above 250 Å in radius which is greater than about 2 m^2/g, but less then about 6 m^2/g.

4,418,005

PRESSURE ACTIVATION OF MAGNESIUM OXIDE CATALYSTS

John R. Dodd, and Daniel H. Ralston, both of Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Jun. 28, 1982, Ser. No. 392,494
Int. Cl.³ B01J *27/02, 21/10*
U.S. Cl. 502—217 **8 Claims**

1. A method for increasing the activity of magnesium oxide-based alkylation catalysts comprising, prior to use in an alkylation reaction, pressure treating the catalysts for a time of at least 2 hours at pressures of at least 40 pounds per square inch gauge and a temperature of at least 150° C.

4,418,006

HYDROCARBON CONVERSION CATALYST SYSTEM

Dae K. Kim, Naperville, Ill., and Ralph J. Bertolacini, Chesterton, Ind., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 170,528, Jul. 21, 1980, Pat. No. 4,325,808. This application Sep. 11, 1981, Ser. No. 301,300
Int. Cl.³ B01J *29/16, 29/26, 27/10*
U.S. Cl. 502—73 **18 Claims**

1. A hydrocarbon conversion catalyst system comprising a physical particle-form mixture of first and second catalysts, the first catalyst comprising at least one noble metal component and a combined halogen deposed on a high-surface area, porous refractory inorganic oxide and being free of a crystalline aluminosilicate component, and the second catalyst being free of a noble metal component and comprising at least one metal component deposed on a solid support comprising a crystalline aluminosilicate zeolite having an alkali metal content of less than about 1 percent of its weight, and being dispersed in a high surface area, porous refractory inorganic oxide; each noble metal component in the first catalyst comprising a noble metal, a compound thereof or a mixture thereof; each metal component in the second catalyst consisting essentially of a member selected from the group consisting of chromium, gallium, germanium, indium, lead, manganese, rhenium, technetium, thallium, tin, tungsten, a compound thereof and a mixture thereof; the weight percent of each noble metal component in the first catalyst, calculated as the noble metal element therein and based on the weight of the first catalyst, being in the range of from about 0.1 to about 1; the weight percent of each combined halogen in the first catalyst, calculated as the halogen element therein and based on the weight of the first catalyst, being in the range of from about 0.1 to about 1; the weight percent of each metal component in the second catalyst, calculated as the metal element therein and based on the weight of the second catalyst, being in the range of from about 0.1 to about 5; the weight percent of crystalline aluminosilicate zeolite in the second catalyst, based on the weight of the second catalyst, being in the range of from about 1 to about 80; and the weight ratio of the first catalyst to the second catalyst being in the range of from about 1:1 to about 10:1.

4,418,007

PREPARATION OF MIXED OXIDE CATALYSTS COMPRISING THE OXIDES OF MOLYBDENUM AND/OR TUNGSTEN

Jean-Yves Derrien, Bourg-la-Reine, France, assignor to Rhone-Poulenc Industries, Paris, France

Filed Oct. 9, 1981, Ser. No. 310,399
Claims priority, application France, Oct. 10, 1980, 80 21652
Int. Cl.³ B01J *23/82, 23/84, 23/85, 23/88*
U.S. Cl. 502—312 **20 Claims**

1. A process for the preparation of a mixed oxide active catalyst having the formula:

$$A_aMo_cW_dB_{b1}Bi_{b2}Fe_{b3}O_x$$

wherein:

A is at least one of the metals selected from nickel, cobalt, manganese and lead;

B is at least one of the metals selected from chromium and thallium;

a is the sum of the values indicating the amounts present of each of the metals A, and is a number ranging from greater than 0 to about 12;

c and d are numbers each equal to or greater than 0 and ranging to 12, with the sum c+d being about 12;

b_1 is the sum of the values indicating the amounts present of each of the metals B and can be zero or greater, b_2 and b_3 are greater than zero, and the sum of $b_1+b_2+b_3$is a number ranging from greater than 0 to about 1.5 $[(c+d)-a]$; and

x is a number satisfying all unbalanced valences,

said process comprising, in a first stage, intimately admixing in aqueous phase the salts of all metals to comprise such active catalyst, with the salts of molybdenum and/or tungsten being ammonium salts and at least one salt of at least one of bismuth, iron and the metals A and B being a nitrate or a chloride, and further wherein in such first stage said intimate admixing comprises successively adding to a first aqueous solution comprising said ammonium salts of molybdenum and/or tungsten in amounts sufficient to satisfy the values c and d, an amount of ammonia sufficient to adjust the pH thereof to a value ranging from about 6 to 8, next adding to the solution which results a second aqueous solution comprising said bismuth salts, iron salts and A and B metal salts in amounts sufficient to satisfy the values a, b_1, b_2 and b_3 and, simultaneously, also adding thereto an amount of ammonia sufficient to maintain the pH of the combined solution at a value ranging from about 6 to 8, and thence filtering the suspension which results to obtain a paste of the desired active catalyst; and, in a second stage, then drying said paste and, at least once, calcining same.

4,418,008

PROCESS FOR INCREASING THE ACTIVITY OF PEROVSKITE CATALYSTS AND HYDROCARBON TREATING PROCESSES USING THE ACTIVATED CATALYST

Robert C. Schucker, and Kenneth S. Wheelock, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham, Fla.

Filed Feb. 24, 1982, Ser. No. 351,969

Int. Cl.³ B01J *21/04, 23/10*

U.S. Cl. 502—340 **8 Claims**

1. A process for increasing the activity of a fresh catalyst comprising a perovskite having at least one alkaline earth metal constituent selected from the group consisting of barium, beryllium, magnesium, calcium, strontium and mixtures thereof, which comprises the step of contacting said catalyst with a reducing gas at reducing conditions for a time sufficient to increase the activity of said catalyst.

4,418,009

ELECTRICAL RESISTOR AND METHOD OF MAKING THE SAME

Curtis L. Holmes, Elkhart, Ind.; William M. Faber, Sr., Plano, Tex.; Gaylord L. Francis, Morristown, N.J., and Otis F. Boykin, Chicago, Ill., assignors to CTS Corporation, Elkhart, Ind.

Continuation of Ser. No. 169,355, Jan. 29, 1962, abandoned. This application Oct. 24, 1965, Ser. No. 506,449

Int. Cl.² H01B *1/02*

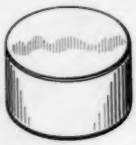
U.S. Cl. 252—514 **3 Claims**

1. The method of manufacturing an electrical resistor comprising:

a. admixing glass particles, finely divided refractory filler oxide, and a pyrolytically decomposable resinate compound containing one of the noble metals,

b. heating the mixture to decompose the metal containing compound,

c. forming the mixture into the desired shape, and



d. firing the mixture at a temperature sufficient to fuse the glass but below the temperature required to soften the refractory filler oxide.

4,418,010

SUBSTITUTED TRICYCLODECANE DERIVATIVES, PROCESSES FOR PRODUCING SAME AND ORGANOLEPTIC USES THEREOF

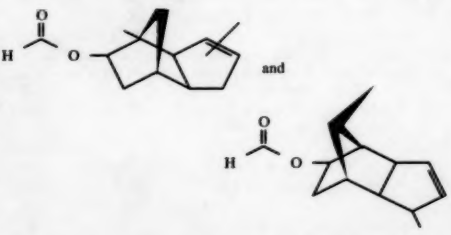
Mark A. Sprecker, Sea Bright, and John B. Hall, Rumson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation of Ser. No. 335,564, Dec. 29, 1981, Pat. No. 4,386,023, which is a continuation of Ser. No. 220,621, Dec. 29, 1980, abandoned, which is a division of Ser. No. 144,898, Apr. 29, 1980, Pat. No. 4,275,251. This application Jan. 10, 1983, Ser. No. 456,979

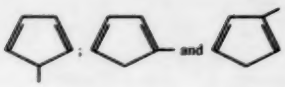
Int. Cl.³ C11B *9/00*

U.S. Cl. 252—522 R **1 Claim**

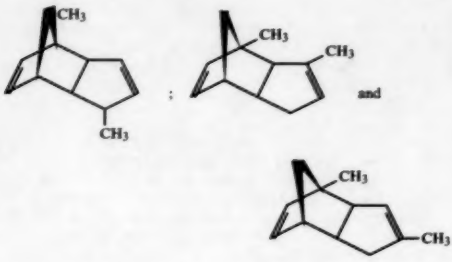
1. A process for augmenting or enhancing the aroma of a perfume composition or cologne comprising the step of adding to a perfume base or a cologne base, an aroma augmenting or enhancing quantity of a composition consisting essentially of a mixture of compounds defined by the structures:



produced by the process consisting essentially of the step of reacting in the presence of a protonic acid catalyst or a Lewis acid catalyst at least one methylcyclopentadiene isomer having a structure selected from the group consisting of



or at least one precursor thereof having a structure selected from the group consisting of:



with formic acid at a temperature in the range of from about 0° C. up to about 50° C. with a concentration of acid catalyst in the reaction mass varying from 0.01% up to 1 mole percent based on the weight of reaction mass.

4,418,011

DETERGENT COMPOSITION PROVIDING ANTISTATIC PROPERTIES

Robert A. Bauman, New Brunswick, and Robert C. Pierce, Plainsboro, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed Aug. 3, 1982, Ser. No. 404,795

Int. Cl.³ C11D 1/52

U.S. Cl. 252—544 **10 Claims**

1. An antistatic composition for laundering fabrics comprising an antistatic amount of isostearic acid, a nonionic detergent and an acrylamide-based cationic polymer in an effective amount to overcome the inactivation of the antistatic properties by said detergent.

4,418,012

LEUCYLALANY-ARGININE DERIVATIVE

Setsuro Fujii, Toyonaka; Mamoru Sugimoto, Sakura, and Takashi Yaegashi, Funabashi, all of Japan, assignors to Torii & Co. Ltd., Tokyo, Japan

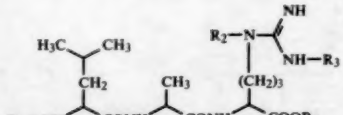
Filed Sep. 9, 1981, Ser. No. 300,415

Claims priority, application Japan, Sep. 16, 1980, 55-128271

Int. Cl.³ C07C 103/52

U.S. Cl. 260—112.5 R **6 Claims**

1. A leucylalanylarginine derivative represented by the formula,



(I)

wherein R_1 represents hydrogen or an amino-protecting group; R_2 and R_3 represent hydrogen or guanidino-protecting groups; and R_4 represents naphthyl.

4,418,013

RAPESEED PROTEIN ISOLATE

Jacquelyn J. Cameron, Harwood, and Chester D. Myers, Ajax, both of Canada, assignors to General Foods, Inc., Don Mills, Canada

Continuation of Ser. No. 244,248, Mar. 16, 1981, Pat. No. 4,366,097. This application Jul. 29, 1982, Ser. No. 402,839

The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.

Int. Cl.³ A23J 1/14

U.S. Cl. 260—123.5 **1 Claim**

1. A method of preparing a rapeseed protein isolate having a protein content of at least 90% by weight, as determined by Kjeldahl nitrogen×6.25, and which is substantially undenatured, as determined by gel filtration, which comprises:

contacting a rapeseed source material solely with water to extract rapeseed protein therefrom and form a rapeseed protein solution, and

diluting the protein solution with water to precipitate the rapeseed protein from said protein solution.

4,418,014

PROCESS FOR THE MANUFACTURE OF SULPHUR WHICH CAN BE RECYCLED

Georg Daniek, Frankfurt am Main, Fed. Rep. of Germany, assignor to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 268,127, May 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 162,417, Jun. 6, 1980, Pat. No. 4,309,401. This application Jun. 30, 1982, Ser. No. 393,538

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1980, 2926528

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ C09B 49/00; C01B 17/06

U.S. Cl. 260—125 **7 Claims**

1. The process for recovering recyclable sulphur from a strongly colored solution from the sulphur dyestuff production containing alkali metal sulphides, alkali metal polysulphides, sulphur dyestuffs or mixtures thereof comprising

(a) mixing said solution at an alkaline pH with a decolorizing amount of an iron or zinc compound which is a hydroxide or the salt of an inorganic acid whereby a precipitate is formed,

(b) separating the precipitate to isolate a decolorized solution,

(c) re-using the decolorized solution in the production of sulphur dyestuffs.

4,418,015

PHTHALOCYANINE REACTIVE DYESTUFFS

Kurt Schreiner, Hoenebach, and Horst Jäger, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

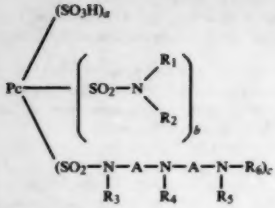
Filed Nov. 17, 1981, Ser. No. 322,354

Claims priority, application Fed. Rep. of Germany, Nov. 28, 1980, 3044798

Int. Cl.³ C09B 47/30, 47/04

U.S. Cl. 260—242.2 **4 Claims**

1. Reactive dyestuffs which, in the form of the free acids, correspond to the formula I



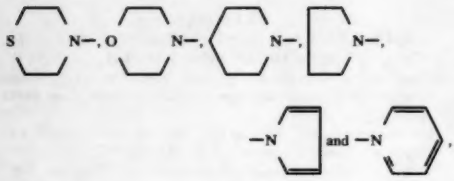
I

wherein

Pc is the radical of a phthalocyanine,

R_1 and R_2 are identical or different and represent hydrogen, unsubstituted alkyl, alkyl substituted by OH, COOH or SO_3H, unsubstituted cycloalkyl, cycloalkyl substituted by OH, COOH or SO_3H, unsubstituted aralkyl, aralkyl substituted by OH, COOH or SO_3H in the aryl part, unsubstituted aryl, aryl substituted by OH, COOH, SO_3H or halogen, or wherein

R_1 and R_2, together with the nitrogen atom between them form a heterocyclic radical selected from



and wherein

a is a number from 0 to 3,

b is a number from 0 to 3 and

c is a number from 1 to 4,

wherein

$$(a+b+c) \leqq 4,$$

and wherein

the radicals A are identical or different and represent unsubstituted straight-chain alkylene with at least 2 carbon atoms, straight-chain C_2–C_{10}-alkylene substituted by OH, SO_3H or COOH; unsubstituted branched C_3–C_{10}-alkylene, branched C_3–C_{10}-alkylene substituted by OH, SO_3H or COOH; unsubstituted C_5–C_7-cycloalkylene, C_5–C_7-cycloalkylene substituted by OH, SO_3H or COOH

R_3 is hydrogen, unsubstituted C_1–C_8-alkyl, C_1–C_8-alkyl substituted by COOH, SO_3H or OH; unsubstituted phenyl-C_1–C_4 alkyl or naphthyl C_1–C_4-alkyl, phenyl-C_1–C_4-alkyl or naphthyl-C_1–C_4-alkyl substituted by OH, SO_3H or COOH

R_4 is a radical of the formula

wherein

R_7 is unsubstituted C_1–C_{12}-alkyl, C_1–C_{12}-alkyl substituted by OH, SO_3H, COOH, halogen, C_1–C_4-alkoxy or phenoxy; unsubstituted C_3–C_7-cycloalkyl; C_3–C_7-cycloalkyl substituted by OH, COOH or SO_3H; unsubstituted benzyl, naphthylmethyl or phenethyl; benzyl, naphthylmethyl or phenethyl substituted by OH, SO_3H, COOH, halogen, NO_2, C_1–C_4-alkyl or C_1–C_4-alkoxy; unsubstituted phenyl or naphthyl; phenyl or naphthyl substituted by OH, SO_3H, COOH, C_1–C_4-alkoxy, halogen, NO_2, C_1–C_4-acyl or C_1–C_4-alkyl; unsubstituted hetero-aryl, hetero-aryl substituted by OH, SO_3H, COOH, halogen or C_1–C_4-alkyl; and wherein

R_5 is Z

wherein

Z is the radical of a halogenotriazine, a halogenopyrimidine, the radical of 2,3-dichloroquinoxaline-6-carboxylic acid chloride, 2,3-dichloroquinoxaline-6-sulphonic acid chloride, 2-chloroacetyl chloride or 2-chloroethanesulphonyl chloride,

and wherein

R_6 is hydrogen, unsubstituted C_1–C_8-alkyl, C_1–C_8-alkyl substituted by COOH, SO_3H or OH; unsubstituted phenyl-C_1–C_4-alkyl, or naphthyl-C_1–C_4-alkyl, phenyl-C_1–C_4-alkyl or naphthyl-C_1–C_4-alkyl substituted by OH, SO_3H or COOH.

4,418,016
METHOD FOR RECOVERING OMEGA-AMINO-DODECANOIC ACID FROM CRYSTALLIZATION MOTHER LIQUORS

Mario De Gaetano, Cesano Maderno, and Luigi Canavesi, Solbiate Olona, both of Italy, assignors to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa SpA, Milan, Italy

Continuation of Ser. No. 161,468, Jun. 20, 1980, abandoned. This application Aug. 14, 1981, Ser. No. 292,423

Claims priority, application Italy, Jun. 29, 1979, 23990 A/79

Int. Cl.³ C09F *5/00*; C11C *3/00*

U.S. Cl. 260—404 **14 Claims**

1. A method for recovering omega-amino-dodecanoic acid by separating the by-products from said crude acid, comprising the following steps in the sequence indicated herebelow:

(a) treating the crude omega-amino-dodecanoic acid with an acid (A) in such an amount as to obtain an acid (A)/amino acid molar ratio between 2:1 and 1:1, in the presence of water in an amount to dissolve at least a part of the salt formed from the acid (A) with the amino-acid while not dissolving most of the by-products which are present in the crude amino acid whereby two phases are obtained;

(b) separating the two phases into a first phase containing most of the salt of the amino-acid with the acid (A), and a second phase containing most of the by-products;

(c) decomposing the salt of the amino-acid, in the first phase, by treating with an organic or inorganic base (B), to obtain free amino acid; and isolating said free amino acid.

4,418,017
PREPARATION OF PHENYLACETONITRILES CARRYING BASIC SUBSTITUENTS

Werner Seitz, Plankstadt; Klaus Scheib, Schauernheim, and Alfred Michel, Enkenbach/Alsenborn, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

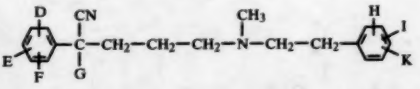
Filed May 20, 1982, Ser. No. 380,468

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1981, 3121766

Int. Cl.³ C07C *121/78*

U.S. Cl. 260—465 E **2 Claims**

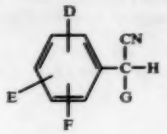
1. A process for the preparation of phenylacetonitriles carrying basic substituents, for the formula I



I

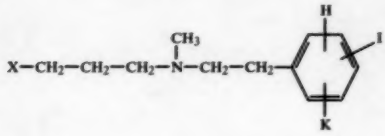
where D, E, F, H, I and K are hydrogen or halogen or alkoxy or alkyl of 1 to 4 carbon atoms and G is a straight-chain or branched aliphatic hydrocarbon radical of not more than 20 carbon atoms or a saturated or unsaturated cyclic or bicyclic

hydrocarbon radical of 3 to 20 carbon atoms, by reaction of an α-substituted phenylacetonitrile of the formula II



II

where D, E, F and G have the above meanings, with a compound of the formula III



III

where H, I and K have the above meanings and X is chlorine, bromine or a leaving group, wherein the reaction is carried out in a solid liquid phase system in the presence of a phase transfer catalyst.

4,418,018

PROCESS FOR THE PRODUCTION OF 2,3-DICHLOROPROPIONITRILE

Kazuyuki Kuroda; Riyoiti Ikematsu, and Kazunari Nitta, all of Ohmuta, Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

Filed Jan. 26, 1982, Ser. No. 342,804

Claims priority, application Japan, Feb. 5, 1981, 56-15024

Int. Cl.³ C07C *120/00, 121/16*

U.S. Cl. 260—465.7 **6 Claims**

1. In a process for the production of 2,3-dichloropropionitrile by the chlorination of acrylonitrile, the improvement which comprises chlorinating acrylonitrile at a temperature of 10° to 60° C. using a chlorine gas in the presence of 0.3 to 15% by weight, based on acrylonitrile, of pyridine or an alkylpyridine and at least 1.0% by weight, based on acrylonitrile, of an alkaline earth metal carbonate.

4,418,019

PROCESS FOR THE MANUFACTURE OF 1-AMINOALKANE-1,1-DIPHOSPHONIC ACIDS

Werner Klose, Erftstadt, and Theodor Auel, Edingen, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 7, 1981, Ser. No. 327,888

Claims priority, application Fed. Rep. of Germany, Dec. 13, 1980, 3047107

Int. Cl.³ C07F *9/38*

U.S. Cl. 260—502.5 C **16 Claims**

1. Process for making 1-aminoalkane-1,1-diphosphonic acids of the general formula (I)

(I)

in which R stands for a straight or branched aliphatic hydrocarbon radical having from 1 to 12 carbon atoms, which comprises:

(a) reacting tetraphosphorus hexoxide with at least one compound of the general formula (II)

(II)

in which R has the meaning given above and X stands for an —ONH_4 or NH_2-radical, the reaction being effected in inert gas atmosphere at a temperature within the range 30° to 100° C., the molar ratio of tetraphosphorus hexoxide to the compound of general formula (II) being about 1 to 2–6; and

(b) crystallizing the 1-aminoalkane-1,1-diphosphonic acid formed and separating it from the reaction mixture.

4,418,020

2,2-DICHLOROACETOACETYL CHLORIDE

Jean-Claude Perlberger, Miege, Switzerland, assignor to Lonza Ltd., Basel, Switzerland

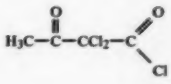
Filed Nov. 13, 1981, Ser. No. 321,053

Claims priority, application Switzerland, Nov. 19, 1980, 8549/80

Int. Cl.³ C07C *53/50*

U.S. Cl. 260—544 Y **1 Claim**

1. 2,2-Dichloroacetoacetyl chloride having the formula:



4,418,021

N-ISOPROPYLCARBANILYLMETHYL DITHIOPHOSPHATES

Natu R. Patel, Overland Park, Kans., assignor to Gulf Oil Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 145,943, May 2, 1980, abandoned, which is a division of Ser. No. 815,335, Jul. 13, 1977, abandoned. This application Sep. 11, 1981, Ser. No. 301,886

Int. Cl.³ C07F *9/165;* **A01N** *57/14*

U.S. Cl. 260—943 **2 Claims**

1. O,O-Diethyl S-(N-isopropyl-3,4-dichlorophenylcarbamoylmethyl)dithiophosphate.

2. O,O-Diethyl S-(N-isopropyl-4-nitrophenylcarbamoylmethyl)dithiophosphate.

4,418,022

PHOSPHORAMIDATES CONTAINING A P-PHENYLENEDIAMINE GROUP

Paul K. Battey, North Yorkshire, and Peter Hope, Littleborough, both of England, assignors to Akzona Incorporated, Asheville, N.C.

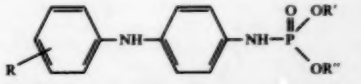
Filed Jul. 19, 1982, Ser. No. 399,580

Claims priority, application Netherlands, Jul. 20, 1981, 8103418

Int. Cl.³ C07F *9/24;* **B01J** *1/18*

U.S. Cl. 260—944 **3 Claims**

1. A phosphoramidate compound of the general formula:



wherein R is a hydrogen atom, a straight-chain or branched-chain alkyl or alkoxy group containing not more than 10 carbon atoms, or cycloalkyl or cycloalkoxy group containing from 5 to 8 carbon atoms, and wherein R′ and R″ may be the same or different and each represents a halogenated or unhalogenated straight-chain or branched-chain alkyl group having 1

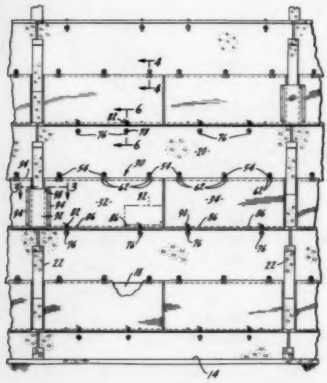
to 22 carbon atoms, a halogenated or unhalogenated cycloalkyl group having 5 to 8 carbon atoms, an alkenyl group having 3 to 22 carbon atoms, a halogenated or unhalogenated phenyl group, an alkylphenyl group containing from 7 to 14 carbon atoms, or an aralkyl group containing from 7 to 15 carbon atoms, or alternatively wherein R' and R'' together are a 1,2- or 1,3-alkylene group containing from 2 to 8 carbon atoms or an o-arylene group containing from 6 to 10 carbon atoms.

4,418,023

COOLING TOWER APPARATUS

Norman E. Dolan, Santa Rosa, Calif., assignor to Ecodyne Corporation, Chicago, Ill.

Filed Apr. 26, 1982, Ser. No. 371,587
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—109 **15 Claims**



1. In a liquid cooling tower having means for delivering liquid and for causing such liquid to fall within said tower, an air inlet, an air outlet, means for causing air to flow from said inlet to said outlet so as to intersect the liquid falling within the tower, and an improved inlet air control assembly at said air inlet, comprising:

(a) a plurality of horizontally spaced, generally inclined louver blade support arms;

(b) a plurality of vertically spaced rows of louver blades secured to said louver blade support arms; and

(c) air control panels secured to at least some of said louver blades, said air control panels comprising:

(i) a substantially rectangular panel member having a first generally horizontal edge portion pivotally secured to said louver blade, said panel member being pivotable between an up position and a down position;

(ii) said panel member cooperates with the louver blade immediately therebelow when in said down position so as to prevent the entry of air between such louver blades; and

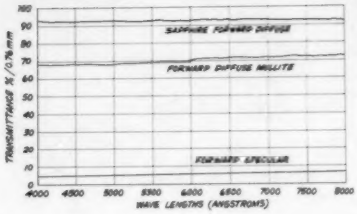
(iii) said panel member permits the entry of air between said louver blade and the louver blade immediately therebelow when in said up position.

4,418,024

PROCESS FOR PRODUCING OPTICALLY TRANSLUCENT CERAMIC

Svante Prochazka, Ballston Lake, and Frederic J. Klug, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1982, Ser. No. 381,820
Int. Cl.[3] B29D *11/00;* **C04B** *35/18*
U.S. Cl. 264—1.2 **4 Claims**



1. A process for producing a polycrystalline mullite body optically translucent in the visible wave length which comprises providing an amorphous shapeless mixed oxide powder consisting essentially of from about 74 weight % to about 76.5 weight % Al_2O_3 balance SiO_2 with a surface area ranging from about 100 square meters per gram to about 400 square meters per gram and a bulk density ranging from about 0.2 g/cc to about 0.3 g/cc containing a significant amount of water, calcining said powder at a temperature ranging from about 490° C. to about 1100° C. to remove water and any organic material therefrom leaving no significant amount thereof producing an amorphous shapeless mixed oxide powder consisting essentially of from about 74 weight % to about 76.5 weight % Al_2O_3 balance SiO_2, said calcining having no significant effect on the oxide composition or morphology of said powder, said calcined powder being pressable at about room temperature into a compact having a minimum density of 1.0 g/cc, pressing said calcined powder into a compact having a minimum density of 1.0 g/cc, firing the compact at a temperature which has no significant deleterious effect on it in oxygen or in a vacuum ranging from about 0.05 torr to about 1 torr producing a gas-impermeable compact, and sintering said gas-impermeable compact in an atmosphere selected from the group consisting of air, argon, helium, nitrogen and mixtures thereof, at a temperature raging from about 1700° C. to about 1850° C. producing an optically translucent sintered body of theoretical density based on the density of 3.16 g/cc±0.01 or 3.17 g/cc±0.01 for said mullite body.

4,418,025

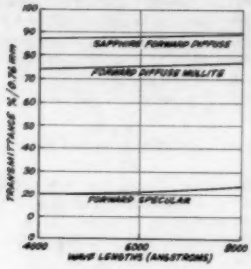
PROCESS FOR PRODUCING OPTICALLY TRANSLUCENT MULLITE CERAMIC

Svante Prochazka, Ballston, and Frederic J. Klug, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 25, 1982, Ser. No. 381,821
Int. Cl.[3] B29D *11/00;* **C04B** *35/18*
U.S. Cl. 264—1.2 **5 Claims**

1. A process for producing a polycrystalline mullite body optically translucent in the visible wave length which comprises providing an amorphous shapeless mixed oxide powder consisting essentially of from about 74 weight % to about 76.5 weight % Al_2O_3 balance SiO_2 with a surface area ranging from about 100 square meters per gram to about 400 square meters per gram and a bulk density ranging from about 0.2 g/cc to about 0.3 g/cc containing a significant amount of water, calcining said powder at a temperature ranging from about 490° C. to about 1100° C. to remove water and any organic material therefrom leaving no significant amount thereof producing an amorphous shapeless mixed oxide powder consisting essen-

tially of from about 74 weight % to about 76.5 weight % Al_2O_3 balance SiO_2, said calcining having no significant effect on the oxide composition or morphology of said powder, said calcined powder being pressable at about room temperature into a compact having a minimum density of 1.0 g/cc, pressing



said calcined powder into a compact having a minimum density of 1.0 g/cc, and sintering said compact in an atmosphere of oxygen at a temperature ranging from about 1700° C. to about 1850° C. producing a sintered body of theoretical density based on the density of 3.16 g/cc±0.01 or 3.17 g/cc±0.01 for said mullite body.

4,418,026

PROCESS FOR SPINNING CELLULOSE ESTER FIBRES

Merrick S. Blackie, West Haddon, and John R. Collins, Leamington Spa, both of England, assignors to Courtaulds Limited, London, England

Filed May 6, 1981, Ser. No. 260,914
Int. Cl.³ B29C 6/00
U.S. Cl. 264—8 **7 Claims**

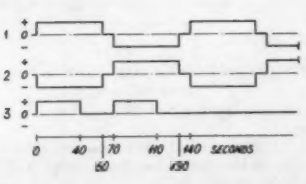
1. A process for spinning fibers of a cellulose ester which comprises using as the spinning dope the product liquor from the carboxylation reaction used to prepare the cellulose ester, adding to said dope not more than about 5 percent, by weight, of another fiber-forming polymer which is soluble or dispersible in said dope to improve the spinnability of said dope, and dry spinning said dope to form fibers.

4,418,027

METHOD OF MOULDING A CERAMIC ARTICLE BY SLIP-CASTING

Ebrahim Massoud, Shelton, England, assignor to National Research Development Corporation, London, England

Continuation of Ser. No. 187,446, Sep. 15, 1980, abandoned. This application Apr. 16, 1982, Ser. No. 368,964
Claims priority, application United Kingdom, Sep. 13, 1979, 7931739; Jun. 18, 1980, 8019913
Int. Cl.³ B06B 1/02
U.S. Cl. 264—24 **10 Claims**



1. A method of moulding a ceramic article by electrophoretically slip-casting, the article having an inner and an outer surface, the method comprising:

(1) placing an aqueous suspension of a ceramic material in a mould having at least three mould parts, each part of which has an electrically conductive porous carbonaceous operative surface constituting the sole electrodes for the electrophoretic slip-casting, the operative surfaces conforming to said outer surfaces of a respective part of the article, the inner surface being undefined by the mould, the carbonaceous component of the surface region being made of particles of from 70 μm to 200 μm maximum diameter, the parts of the mould being electrically insulated from one another, and

(2) intermittently electrically charging the operative surfaces of the mould independently making each part anodic with respect to said aqueous suspension, a plurality of the parts taking turns at being cathodic with respect to the suspension, each part of said plurality being cathodic and anodic at least twice each, at least one part at any time being cathodic except for possible intervals when no part is anodic and continuing the electrical charging until the ceramic material has built up to the desired thickness.

4,418,028

FILTRATION BLOCK FOR LIQUID METALS AND ALLOYS, WITH A MECHANICAL AND PHYSICAL-CHEMICAL EFFECT

Pierre du Manoir de Juaye, Virines Cognin; Pierre Guerit, Chambery; Gilbert Pollet, LaRavoire, and Marc Vassiliadis, Saint Germain en Laye, all of France, assignors to Servimetal, Paris, France

Division of Ser. No. 111,905, Jan. 14, 1980, abandoned. This application Jul. 2, 1981, Ser. No. 279,804
Int. Cl.³ B29H 7/20
U.S. Cl. 264—43 **7 Claims**

1. A process for producing a block for filtering select molten metals and alloys by mechanical and physical-chemical means, comprising:

(a) placing within a mold a plurality of sinterable elements of active mineral compounds having a select shape and size, and comprising one mineral salt selected from the group consisting of CaF_2, MgF_2, AlF_3, LiF, KF and BaF_2, said mineral compounds having a melting point exceeding that of the molten metal or alloys to be filtered,

(b) heating within said mold said elements of active mineral compounds within a dry atmosphere to sinter and consolidate said elements into a porous block, and

(c) cooling said sintered block to form said filter having pores selectively dimensioned to mechanically remove impurities from said molten metal and alloy while said mineral compound provides a physical-chemical reaction with said molten metal and alloy for removal of additional impurities.

4,418,029

STABILIZED POLYPHENYLENE SULFIDE FIBER

Jerry O. Reed, and Ronald D. Mathis, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 11, 1982, Ser. No. 376,991
Int. Cl.³ D01F 1/10
U.S. Cl. 264—211 **6 Claims**

1. In a process for melt extruding fiber grade poly(arylene sulfide) resin having a melt flow of about 50 to about 400 into a fiber, the improvement for reducing gel formation during melt extrusion of said resin into a fiber which comprises incorporating into siad resin an effective heat and melt flow stabilizing amount of at least one Group IIA or Group IIB metal salt of a fatty acid which amount is sufficient to retard curing and cross-linking or substantial alteration of physical properties during heating of said resin during melt extrusion and thereby minimizing plugging of filters and spinnerets with gel.

4,418,030
PROCESS FOR THE PRODUCTION OF GRANULATES OF ORGANIC SUBSTANCES PRESENT IN THE FORM OF A MELT

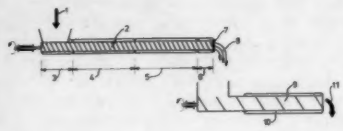
Ernst-Willi Müller, and Claus Rathjen, both of Leverkusen, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Dec. 15, 1981, Ser. No. 330,880

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049196

Int. Cl.³ B29B *1/02*

U.S. Cl. 264—142 **7 Claims**



1. A process for the production of granulates of crystallizable organic substances from a melt comprising low-temperature crystalization of the melt in a twin-screw extruder, extrusion through a breaker plate at the end of the extruder and subsequent cooling of the extruded product,

further comprising adjusting the temperature prevailing in the screw extruder, adjusting the twin screw rotational speed and adjusting the temperature of the breaker plate to produce crystallization of from 70% to 99.5% of the organic substances by the time it reaches the end of the twin screw, and crystallizing the remainder in a subsequent cooling operation.

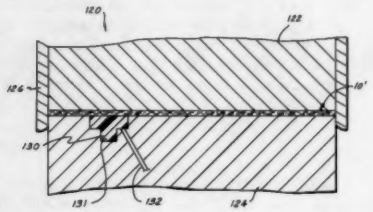
4,418,031
MOLDABLE FIBROUS MAT AND METHOD OF MAKING THE SAME

Richard P. Doerer, Grosse Pointe, Mich., and Joseph T. Karpik, Floodwood, Minn., assignors to Van Dresser Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 251,239, Apr. 6, 1981. This application Mar. 2, 1982, Ser. No. 352,501

Int. Cl.³ B28B *9/00*

U.S. Cl. 264—241 **8 Claims**



1. A two-stage method of manufacturing a permanently rigid shaped end product comprising:

(1) in a first stage and by a dry process, making a soft, flexible, handleable fibrous mat by providing a mixture consisting essentially of cellulose base fibers, linking and activatable bonding means including carrier fibers, and a thermosetting ingredient,

forming said mixture into a mat in which said fibers are interspersed,

activating said bonding means to cause said carrier fibers to bond to said base fibers and to each other forming connections therebetween and holding said fibers together,

said thermosetting ingredient remaining in an uncured state during said activation of said bonding means and

(2) thereafter making said end product in a second stage at any later time by subjecting said mat to sufficient heat and pressure in a compression molding operation to cause said thermosetting ingredient to cure and to compress the material to the desired thickness and density, and molding and bonding an attachment to said end product simultaneously with the making of said end product and in said compression molding operation, thereby completing the manufacture of said end product.

4,418,032
PROCESS FOR DRAWING TOWS OF FILAMENTS IN WATER

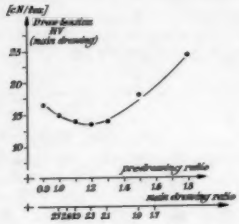
Erich H. Keil, Untermeitingen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 19, 1981, Ser. No. 322,730

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1980, 3044073

Int. Cl.³ B29C *17/02*

U.S. Cl. 264—289.6 **6 Claims**



1. A process including a predrawing and a main drawing stage for drawing a fiber tow made from polyester fibers, said process comprising:

predrawing the fiber tow in water having a temperature of from 71° to 90° C. at a predrawing ratio which (a) orients the fibers in the fiber tow without attaining the draw point and (b) substantially minimizes the draw tension needed for orientation and draw point attainment in a subsequent main drawing stage;

cooling the fiber tow to a temperature below 40° C. after the predrawing and before the main drawing stage;

subsequently drawing the fiber tow in a main drawing stage at a main drawing ratio corresponding to a drawing tension which is not more than about 10% greater than the minimum drawing tension for orienting the fibers in the fiber tow and providing draw point formation;

whereas, for a given total draw ratio, the predrawing ratio is selected so as to permit the selection of a main drawing ratio corresponding to the said drawing tension, thereby not exceeding about 10% above the minimum drawing tension and nevertheless providing draw point formation.

4,418,033
METHOD OF MANUFACTURING A DECORATED FORMING ARTICLE

Yoshiharu Hatakeyama, 5-29-10, Tachibana, Sumidaku, Tokyo, Japan

Filed Jan. 17, 1980, Ser. No. 112,726

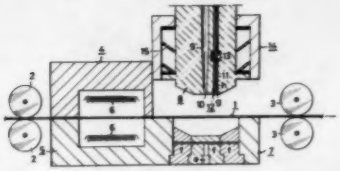
Claims priority, application Japan, Jun. 20, 1979, 54-76885; Dec. 3, 1979, 54-166103[U]

Int. Cl.³ B29C *1/00*

U.S. Cl. 264—509 **2 Claims**

1. A method of manufacturing a decorated article comprising heating a transfer foil in a preheating apparatus, said transfer foil having a base film, a mold lubricant layer overlying the

base film, a printing layer overlying the mold lubricant layer, and an adhesive layer overlying the printing layer, guiding said heated transfer foil into a metal mold, said metal mold including a pouring mold and an injection mold, causing said transfer foil to contact the inner circumference of a wall surface of the pouring mold by spraying hot air from the injection mold and by applying a vacuum from the pouring mold while guiding



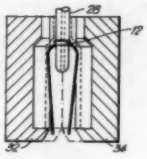
the heated transfer foil into the metal mold with the printing layer of the transfer foil facing the injection mold, closing both the injection mold and the pouring mold completely, forming an article by injecting synthetic resin from the injection mold, peeling off the article from the base film and mold lubricant layer of the transfer foil while removing the article from the metal mold and only transferring the printing layer and adhesive layer of the transfer foil to the outer surface of the article.

4,418,034

METHOD FOR PRODUCING A CONTAINER

Georg Nemeskeri, Chester, Canada, assignor to G.N. Plastics Company Limited, Nova Scotia, Canada

Filed Oct. 16, 1981, Ser. No. 312,071
Claims priority, application Canada, Oct. 24, 1980, 363175
Int. Cl.³ B29C *17/04, 17/07*
U.S. Cl. 264—522 **1 Claim**



1. The method of making a re-sealable container with a preformed neck from a flat piece of plastic sheet comprising the steps of:

(a) providing an aperture in a flat sheet of plastic;

(b) inserting a heated pin in said aperture to re-shape the sheet of plastic surrounding the aperture to form a neck opening and subsequently removing the heated pin;

(c) inserting a non-conductive blow pin in said neck opening and evenly heating said plastic sheet;

(d) raising said non-conductive blow pin to make said preformed neck and to allow the plastic sheet to fold, and inserting said plastic sheet between open mold halves;

(e) closing said mold halves and applying blow pressure through said blow pin to blow up said plastic sheet within the confines of said mold;

(f) applying a welding pulse to said mold halves to create a weld along the free edges of the plastic sheet material to form said container; and

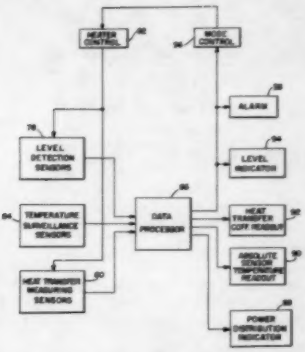
(g) opening said mold halves, removing said blow pin from the preformed neck, and removing the finished container.

4,418,035

COOLANT CONDITION MONITOR FOR NUCLEAR POWER REACTOR

Robert D. Smith, Bethesda, Md., assignor to Scandpower, Inc., Bethesda, Md.

Filed May 27, 1981, Ser. No. 267,541
Int. Cl.³ G21C *17/00*
U.S. Cl. 376—247 **19 Claims**



19. In combination with a power distribution sensor for the fuel core of a nuclear power reactor having a body of coolant, the sensor including a gamma radiation heated body, in heat transfer relation to the coolant, within which a varying temperature distribution is established, thermoouple junctions mounted within the body at spaced locations, and monitoring means connected to said thermocouple junctions for measuring temperature differentials in the heated body reflecting localized power generation, the improvement comprising additional means connected to the thermocouple junctions for detecting changes in the temperature differentials caused by changes in relative coolant conditions at said spaced locations, and alarm means connected to the additional detecting means for indicating a drop in coolant level within the reactor.

4,418,036

FUEL ASSEMBLY FOR A NUCLEAR REACTOR

Robert K. Gjertsen, Monroeville; Stephen N. Tower, Washington Twp., Westmoreland County, and Edgar A. Huckestein, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 16, 1980, Ser. No. 217,051
Int. Cl.³ G21C *3/34*
U.S. Cl. 376—438 **4 Claims**

1. A fuel assembly for a nuclear reactor comprising:

a top nozzle;

a bottom nozzle;

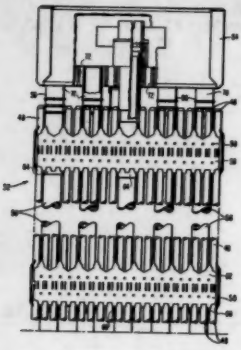
a plurality of Zircaloy guide tubes extending from said top nozzle to said bottom nozzle and arranged in a regular array with a center guide tube arranged in substantially the center of said array;

a plurality of fuel elements containing nuclear fuel and arranged between said top nozzle and said bottom nozzle;

an Inconel top grid arranged near said top nozzle and having a plurality of stainless steel first sleeves brazed thereto with all but said center guide tube bulge attached to said first sleeves and with said center guide tube being slidably and rotatably disposed in said top grid;

an Inconel bottom grid arranged near said bottom nozzle and having a plurality of stainless steel second sleeves brazed thereto with all but said center guide tube bulge attached to said second sleeves and with said center guide tube being slidably and rotatably disposed in said bottom grid; and

a plurality of Zircaloy intermediate grids arranged between said top grid and said bottom grid and having a plurality of Zircaloy sleeves welded to each of said intermediate



grids with all but said center guide tube bulge attached to said Zircaloy sleeves and with said center guide tube being slidably and rotatably disposed in said intermediate grids.

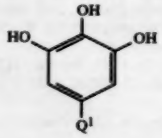
4,418,037

COLOR INDICATOR COMPOSITION AND FILM FOR DETECTING HYDROGEN PEROXIDE

Harumi Katsuyama, Asakashi, and Tadao Shishido, Minamiashigarashi, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1982, Ser. No. 369,718
Claims priority, application Japan, Apr. 17, 1981, 56-058068
Int. Cl.³ G01N *33/52, 33/66*
U.S. Cl. 422—56 **17 Claims**

1. In a color indicator composition for detecting hydrogen peroxide comprising a substance having peroxidase activity and a substance capable of causing a detectable change in the presence of hydrogen peroxide and said substance having a peroxidase activity, the color indicator composition for detecting hydrogen peroxide comprising a pyrogallol derivative represented by formula (I):



(I)

wherein Q^1 represents a nitro group, a cyano group, an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group, an aralkyl group, a carboxyl group or a $—COOQ^2$ group wherein Q^2 represents an alkyl group, a substituted alkyl group, an aryl group, a substituted aryl group or an aralkyl group.

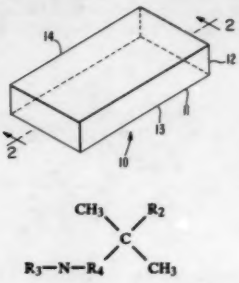
4,418,038

DISINFECTING WITH CHLORINE-CONTAINING BIOCIDE DISPENSED FROM SHAPED POLYMERIC BODY

Felix Theeuwes, Los Altos, Calif., assignor to Alza Corporation, Palo Alto, Calif.

Filed Nov. 2, 1981, Ser. No. 317,528
Int. Cl.³ A01N *25/08, 29/00*
U.S. Cl. 422—37 **9 Claims**

1. A process for disinfecting an article of manufacture, which process comprises placing the article in the presence of a device, which device comprises a body of a polymer containing a biocide of the formula:



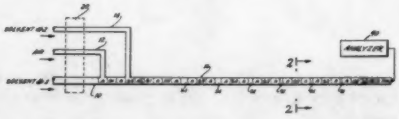
wherein R_2 is a member selected from the group consisting of CO_2R_5 and CH_2OCR_5, wherein R_5 is a member selected from the group consisting of alkyl of 1 to 20 carbons, and an alkylenedioxy of 1 to 7 carbons; R_3 and R_4 are selected from the group consisting of chlorine, hydrogen and alkyl with at least one of R_3 and R_4 chlorine; and the acid addition salts; which biocide on its release from the device and in the presence of moisture contacts the article for disinfecting same.

4,418,039

SOLUTE TRANSFER TECHNIQUE

Harvey J. Adler, New City, N.Y., assignor to Technicon Instruments Corporation, Tarrytown, N.Y.

Continuation-in-part of Ser. No. 754,773, Dec. 17, 1976, abandoned. This application May 19, 1978, Ser. No. 907,370
Int. Cl.³ G01N *31/08*
U.S. Cl. 422—82 **7 Claims**



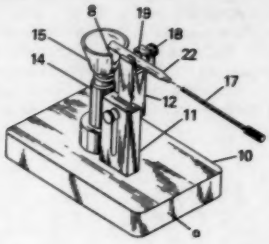
1. Apparatus for transferring a solute from a first solvent to a second solvent, comprising: a selectively permeable tubular membrane, said membrane being impermeable to said solute and to said second solvent, first means flowing said first solvent along said membrane for evaporation to dryness of said first solvent across said membrane to leave a residue of all of said solute on an inner surface wall of said membrane, second means for flowing said second solvent along said tubular membrane to dissolve said residue, and analyzing means for analyzing said second solvent containing said solute containing said solute residue, said second means including means for segmenting said first solvent with segments of an immiscible gas, said membrane being impermeable to said immiscible gas, and means for introducing said second solvent as discrete segments intermediate successive segments of said first solvent and separated therefrom by immiscible gas segments.

4,418,040

LABORATORY STAND ASSEMBLY

Narbik A. Karamian, 7609 Exeter Rd., Bethesda, Md. 20014

Filed Sep. 21, 1981, Ser. No. 304,308
Int. Cl.³ B01L 9/00, 11/00
U.S. Cl. 422—101 4 Claims



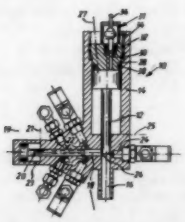
1. A laboratory stand assembly comprising a base, a support extending vertically from said base, a sample holder adjustably positioned on said support for vertical movement, a clamp member attached to an upper and of said sample holder to horizontally secure an adsorption tube containing a sample thereto, an adsorption tube horizontally secured in said clamp member, a donut shaped member contacting said base and positioned adjacent to said vertically extending support for receiving a sample receiving vial therein, a funnel having a cut out portion on the side thereof for insertion of one end of said adsorption tube and a discharge end adapted to be received by a sample receiving vial, said funnel containing a screen positioned therein and probe means to discharge an adsorbent and glass wool plugs from said adsorbtion tube into said funnel.

4,418,041

HIGH-PRESSURE MIXING HEAD

Vincent L. Johnson, Seabrook, Tex., and Kurt Moser, Lindau, Fed. Rep. of Germany, assignors to Admiral Maschinenfabrik GmbH, Lindau, Fed. Rep. of Germany

Filed Oct. 26, 1981, Ser. No. 315,071
Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3040922
Int. Cl.³ B01F 5/04, 15/02; B01J 14/00
U.S. Cl. 422—133 6 Claims



1. A high-pressure mixing head for mixing and foaming at least two reactive plastics material components, comprising:

a mixing chamber which has opening thereinto nozzle orifices associated with said plastics material components and a blowing agent;

a metering plunger reciprocable within said mixing chamber;

a mixing chamber outlet;

a discharge section in communication with said mixing chamber through an opening at said mixing chamber outlet and extending approximately normal to said mixing chamber, said discharge section being of greater dimensions than said mixing chamber;

a purging plunger reciprocable within said discharge section;

variable damper means for varying the size of the opening at said mixing chamber outlet to said discharge section comprising a throttling plunger reciprocable along the longitudinal axis of said mixing chamber between a withdrawn position out of said discharge section and a damping position at which said throttling plunger extends into said discharge section and at least partially restricts the size of the opening of said mixing chamber outlet to said discharge section.

4,418,042

ION EXCHANGE PROCESS USING RESINS OF HIGH LOADING CAPACITY, HIGH CHLORIDE TOLERANCE AND RAPID ELUTION FOR URANIUM RECOVERY

Tsoung Y. Yan, Philadelphia, Pa., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 69,688, Aug. 27, 1979, Pat. No. 4,312,838. This application Dec. 4, 1981, Ser. No. 327,395
Int. Cl.³ C01G 56/00
U.S. Cl. 423—7 8 Claims

1. A method for the recovery of uranium from a carbonate lixiviant, comprising the steps of:

a. passing said lixiviant over a type I or a type II anionic ion exchange resin to retain uranium predominantly in the form of a precipitate; and

b. recovering said precipitated uranium from the resin by contacting the resin with an aqueous carbonate solution having a pH not lower than 8.

4,418,043

PROCESS FOR SEPARATING METALS FROM AQUEOUS SOLUTIONS

Klaus Lehr, Hürth-Knapsack, and Gero Heymer, Erftstadt, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 30, 1981, Ser. No. 288,667
Claims priority, application Fed. Rep. of Germany, Aug. 7, 1980, 3029897
Int. Cl.³ C01G 7/00, 55/00, 13/00
U.S. Cl. 423—22 6 Claims

1. A process for separating seminoble metals and noble metals, respectively, from aqueous solutions having compounds of these metals dissolved therein, by reaction with yellow phosphorus, which comprises conveying the aqueous solutions through a first zone and a second zone, the two zones being arranged one above the other; said first zone having carrier material coated with yellow phosphorus placed therein, the coated carrier material containing carrier and yellow phosphorus in a ratio by weight within the range (1:0.001) to (1:x), x standing for the product of the volume of pores of the carrier in cc and the density of yellow phosphorus in grams per cc.; said second zone having uncoated carrier material placed therein; and the carrier material in said two zones being selected from the group consisting of active carbon, carbon black, hydrophobic silicic acid and hydrophobic zeolites.

4,418,044

NITRIC OXIDE AND SULFUR OXIDE ABSORPTION BY SCRUBBING WITH $FE^{++}/S_2O_3^{=}$

Metro D. Kulik, Pittsburgh, Pa., assignor to Conoco Inc., Wilmington, Del.

Filed Jan. 15, 1982, Ser. No. 339,279
Int. Cl.³ C01B 21/00, 17/00
U.S. Cl. 423—235 12 Claims

1. A method of scrubbing a gaseous mixture comprising NO and SO_2 said method comprising

providing a scrubbing solution, said scrubbing solution comprising ions of either an alkali metal or ammonium and

Fe^{++} and $S_2O_3^{--}$ in a $S_2O_3^{--}/Fe^{++}$ mol ratio of about 5.0 at a $S_2O_3^{--}$ ion concentration of at least 1.3 mols per liter of $S_2O_3^{--}$ in a liquid mixture consisting essentially of alcohol and water scrubbing said gas comprising nitric oxide and SO_2 with said scrubbing solution.

4,418,045

METHOD FOR DISPOSAL OF WASTE GAS AND APPARATUS THEREFOR

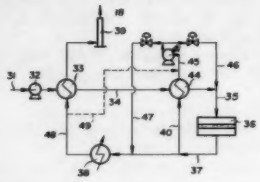
Takahisa Sato; Keizo Maruyama, both of Himeji, and Kunio Sano, Ako, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co., Ltd., Osaka, Japan

Filed Sep. 14, 1981, Ser. No. 302,219

Claims priority, application Japan, Sep. 19, 1980, 55-129218; Sep. 24, 1980, 55-131698

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—245 **8 Claims**



1. A method for the disposal of waste gas containing hydrocarbons, carbon monoxide and other inflammable organic compounds, comprising the steps of:

(a) heating said waste gas by heat exchange with the outlet gas of a catalytic-oxidation reactor to provide hot waste gas,

(b) heating the said hot waste gas by heat exchange with a first portion of the outlet gas of said catalytic-oxidation reactor to yield heated waste gas,

(c) subjecting the said heated waste gas to complete oxidation in said catalytic-oxidation reactor thereby rendering the gas no longer noxious and providing a stream of hot outlet gas having a first and second portion

(d) utilizing the first portion of said outlet gas to heat said hot waste gas,

(e) mixing a first part of said first portion of said outlet gas after its utilization for heating said hot waste gas with the remaining second portion of said outlet gas

(f) mixing the remaining part of said first portion of said outlet gas after its utilization for heating said hot waste gas with said heated waste gas, and

(g) subjecting to heat recovery the combined mixture of the second portion of the said outlet gas with said first part of said first portion of the outlet gas after its utilization for heating said hot waste gas.

4,418,046

CATALYTIC OXIDATION APPARATUS

Masanori Izumo, Neyagawa; Keiichiro Kametani, Osaka; Sigehito Ota, Hirakata, and Kenji Mikami, Takatsuki, all of Japan, assignors to Daikin Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 220,892, Dec. 29, 1980, abandoned, which is a continuation of Ser. No. 133,264, Mar. 24, 1980, abandoned. This application Sep. 23, 1981, Ser. No. 304,944

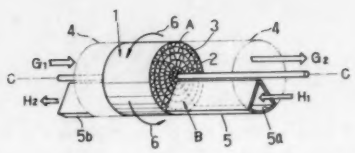
Claims priority, application Japan, Apr. 4, 1979, 54-45297

Int. Cl.³ B01D *53/36*

U.S. Cl. 423—245 **3 Claims**

1. A process for catalytically oxidizing a gas containing at least one member selected from a group consisting of carbon monoxide, formaldehyde and methyl alcohol comprising

(i) utilizing a catalytic oxidation apparatus comprising a cylindrical honeycomb structure including a multiplicity of small passageways extending therethrough in parallel and having an oxidizing catalyst deposited thereon, means for separating a number of the passageways as a catalyst regenerating zone from the other passageways serving as an oxidizing zone, said oxidizing zone being held in communication with a passage for the gas and said catalyst regenerating zone being held in communication with a passage for hot air, means for providing continuously shifting of the passageways which constitute the regenerating zone, and hence those which constitute the ozidizing zone, throughout the entire honeycomb structure circumferentially thereof to continuously render sequential portions of the honeycomb structure serviceable, from portion to portion, as the regenerating zone provided by said number of passageways, the area of the regenerating zone constituting 1/10 to 1/500 of the whole passageway area; and



(ii) introducing said gas containing at least one member selected from the group consisting of carbon monoxide, formaldehyde and methyl alcohol into the catalytic oxidation apparatus at a room temperature; and simultaneously introducing a hot gas into the regenerating zone at a temperature of a least 80° C., while continuously shifting said regenerating zone circumferentially of said honeycomb structure.

4,418,047

STABLE ISOCYANIC ACID COMPOSITIONS

Steven L. Trenbeath, Fairfield; Robert W. Novak, Stamford, and Allan M. Feldman, Norwalk, all of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed Sep. 23, 1981, Ser. No. 304,728

The portion of the term of this patent subsequent to Feb. 15, 2000, has been disclaimed.

Int. Cl.³ C01C *3/00, 3/14*

U.S. Cl. 423—265 **7 Claims**

1. A stable isocyanic acid composition consisting essentially of isocyanic acid, a solubilizing amount of an organic solvent therefor, and a labile halide compound in an amount calculated as hydrogen halide of between 0.01 and 1 weight percent based on the isocyanic acid.

4,418,048

ALUMINOPHOSPHORUS COMPOUNDS

Alan Dyer, Manchester, and Abraham Araya, London, both of England, assignors to Laporte Industries Limited, London, England

Filed Jun. 10, 1980, Ser. No. 158,294

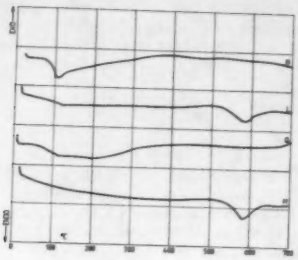
Int. Cl.³ C01B *25/36*

U.S. Cl. 423—305 **16 Claims**

1. A process for the preparation of an anion exchanger comprising an aluminophosphorus compound comprising contacting an aluminous compound with an excess, over that required to form the aluminophosphorus compound, of an ammonium phosphate melt, thereafter dissolving the excess of phosphate used to form the melt in water or an aqueous solution and recovering the remaining crystalline water insoluble aluminophosphorus compound.

11. A water insoluble crystalline anion exchanger comprising an aluminophosphorus compound consisting essentially of

a cationic framework of aluminum, oxygen and phosphorus atoms, the ratio of the number of atoms of phosphorus to the



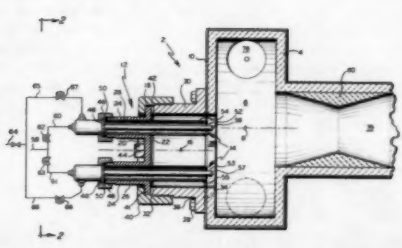
number of atoms of aluminum being greater than 1:1, and, optionally, silicon atoms.

4,418,049

CHANGING OIL TUBES IN A CARBON BLACK REACTOR

Willie Tillman, Vinton, La., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 28, 1982, Ser. No. 383,371
Int. Cl.[3] C01B *31/02*; C09C *1/48*
U.S. Cl. 423—450 5 Claims



1. A method for producing carbon black wherein the feedstock tubes are changed comprising
   (a) introducing a carbonaceous feedstock into the reaction flow passage of a carbon black reactor through a first feedstock tube;
   (b) positioning a second feedstock tube parallel to the first feedstock tube;
   (c) shifting the second feedstock tube into the position which was occupied by the first feedstock tube;
   (d) introducing the carbonaceous feedstock into the carbon black reactor through the second feedstock tube; and
   (e) terminating the flow of carbonaceous feedstock through the first feedstock tube.

4,418,050

CARBON BLACK PROCESS

Paul J. Cheng, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Aug. 25, 1982, Ser. No. 411,230
Int. Cl.[3] C01B *31/02, 31/14*; C09C *1/48*
U.S. Cl. 423—450 4 Claims

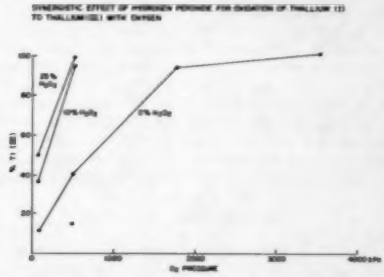
1. A process for producing carbon black by pyrolysis of a feed hydrocarbon which comprises:
   (a) subjecting the feed hydrocarbon to carbon black producing conditions in a carbon black reaction zone to form a gaseous effluent comprising carbon black smoke containing finely divided carbon black particles,
   (b) quenching said effluent to substantially reduce the temperature thereof,
   (c) passing said quenched smoke to a preagglomeration zone operated under conditions which form agglomerated carbon black particles of increased size in said smoke, and
   (d) flowing the fluids from (c) containing agglomerated carbon black particles through tubular flow path of an indirect heat exchange zone to thereby minimize deposition of carbon black on the walls of said flow path, and increase the heat transfer coefficient of said indirect heat exchange zone.

4,418,051

PROCESS FOR PREPARING THALLIUM (III)

Richard A. Brown, Trenton; Lance R. Byers, East Windsor, and Robert D. Norris, Cranbury, all of N.J., assignors to FMC Corporation, Philadelphia, Pa.

Filed Feb. 28, 1983, Ser. No. 470,344
Int. Cl.[3] C01G *15/00*
U.S. Cl. 423—592 20 Claims



1. A process for converting a thallium(I) compound to a thallium(III) compound comprising contacting an alkaline solution of the thallium(I) compound with gaseous oxygen in the presence of an effective amount of a peroxygen compound.

4,418,052

NOVEL DIAGNOSTIC COMPOSITIONS AND METHOD FOR RADIOLOGIC IMAGING OF FIBRINOGEN DEPOSITION IN THE BODY

Dennis W. Wong, 2853 Sunnyglen Rd., Torrance, Calif. 90505

Filed Aug. 12, 1980, Ser. No. 177,503
Int. Cl.[3] A61K *43/00, 49/00*
U.S. Cl. 424—1.1 15 Claims

1. A method of labeling human or animal fibrinolytic enzymes with the rationuclide Technetium-99m at physiological pH 6–8 condition comprising the sequential steps of:
   a. treating 2–3 ml(60–100 mCi) ^{99m}Tc-pertechnetate in normal saline with 0.5 ml of a solution of 0.1–5 mg stannous chloride, stannous tartrate or stannous fluoride in 0.05 N hydrochloric acid at room temperature for about 1–10 minutes;
   b. raising the pH of the acidic mixture of step (a) to 7.4 with a sufficient amount of pH 12.4 sodium citrate/NaOH solution;
   c. adding 5,000 to 10,000 units of the desired fibrinolytic enzyme to be labeled in 1–2 ml diluents to the admixture of step (b) and incubating at 37° C. or at room temperature for 10–30 minutes.

4,418,053

DENTAL PROPHYLAXIS COMPOSITIONS AND THEIR USE

Joseph C. Muhler, Howe, and Mark S. Putt, Fort Wayne, both of Ind., assignors to Indiana University Foundation, Bloomington, Ind.

Continuation-in-part of Ser. No. 131,266, Mar. 17, 1980, abandoned. This application Feb. 4, 1982, Ser. No. 345,780

Int. Cl.³ A61K *7/16, 7/18*

U.S. Cl. 424—52 8 Claims

1. A dental prophylaxis preparation comprising, as its principle cleaning and polishing constituent, particles of a calcined mineral selected from the group consisting of smectite, sepiolite, and chlorite minerals, substantially none of the calcined particles being retained on an 80 mesh screen, essentially all of the calcined particles passing through a 100 mesh screen, with the median particle size lying in the range of about 10–40 microns, the calcined particles being predominantly of the magnesium metasilicate form and having a lamellar crystal structure comprising superimposed layers of two-dimensional silica tetrahedra and two-dimensional octahedra.

4,418,054

POLYMERIC QUATERNARY AMMONIUM COMPOUNDS FOR SKIN CARE

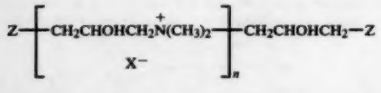
Harold A. Green, Havertown, Pa.; John J. Merianos, Middletown, and Alfonso N. Petrocci, Glen Rock, both of N.J., assignors to Millmaster Onyx Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 119,948, Feb. 2, 1980, Pat. No. 4,325,940, which is a continuation-in-part of Ser. No. 29,778, Feb. 13, 1979, Pat. No. 4,304,910, which is a continuation-in-part of Ser. No. 980, Jan. 4, 1979, Pat. No. 4,188,293, which is a continuation-in-part of Ser. No. 902,894, May 4, 1978, Pat. No. 4,190,644, which is a continuation-in-part of Ser. No. 744,617, Nov. 24, 1976, Pat. No. 4,089,977. This application Feb. 16, 1982, Ser. No. 348,827

Int. Cl.³ A61K *31/785, 7/48*

U.S. Cl. 424—70 2 Claims

1. A method of skin care which comprises applying to the skin a softener composition containing, as an additive, from about 0.3 to about 1.0% by weight of an uncapped linear polyquaternary ammonium compound having the formula:



wherein Z is either X or $N(CH_3)_2$, X is a halogen of atomic weight above 30 and n is an integer of from 2 to about 30.

4,418,055

STERILIZATION SYSTEM

Harold W. Andersen; Shirley R. Andersen, both of Oyster Bay; Clifford Zaner, Holbrook, and Charles H. Harrison, Oyster Bay, all of N.Y., assignors to Anprosol Incorporated, Oyster Bay, N.Y.

Continuation of Ser. No. 119,614, Feb. 8, 1980, abandoned, which is a continuation of Ser. No. 924,018, Jul. 12, 1978, abandoned. This application Aug. 19, 1981, Ser. No. 294,113

Int. Cl.³ A01N *25/00, 59/00*

U.S. Cl. 424—126 6 Claims

1. A chlorine-based sterilizing solution suitable for practical use for sterilizing medical articles including metal medical articles comprising:

0.02 to 1% of an alkali metal or alkaline earth metal hypochlorite,

0.1 to 0.5% dimethyl lauryl amine oxide (30% active), and

1.4 to 20% of di(alkali metal) phosphate titrated to a pH of 7.0 to 8.0 with mono(alkali metal) phosphate with the proviso that the lower limit of di(alkali metal) phosphate is 4.0% when the amount of said hypochlorite is from 0.5 to 1%, said percentages being based on weight (in grams) per 100 ml. of solution, said sterilizing solution being operable to effect sterilization within a sixty-minute contact time and having an effective life of at least twenty-four hours, said sterilizing solution being free of deleterious effects on said metal articles within said sixty-minute contact time and being substantially non-irritating to tissue.

4,418,056

PROCESS FOR MAKING CUPRIC HYDROXIDE

Mario R. R. Gonzalez, Colonia Industrial Vallejo La Patera, Mexico, assignor to Cuproquim S.A., Mexico City, Mexico

Filed Dec. 27, 1982, Ser. No. 453,212

Int. Cl.³ C01G *3/02;* A01N *59/20;* A61K *33/34*

U.S. Cl. 424—142 4 Claims

2. A method for making a stable cupric hydroxide which comprises the steps of:

preparing a suspension of insoluble copper oxychloride in an aqueous medium, the concentration of said copper oxychloride being 98 grams per liter,

adding approximately 1.0% by weight sodium lignosulfonate to said copper oxychloride suspension for more uniformly dispersing said copper oxychloride in suspension,

agitating the copper oxychloride suspension and added sodium lignosulfonate until a desired viscosity is reached,

continuing agitation of the mixture of sodium lignosulfonate and copper oxychloride suspension while rapidly adding a 50.0% concentration of a sodium hydroxide solution that contains up to an 80% excess of sodium hydroxide by weight over the stoichiometrically equivalent quantity necessary to react with said copper oxychloride to form cupric hydroxide, said sodium lignosulfonate further acting as a stabilizer to prevent water loss from the cupric hydroxide, and

recovering the cupric hydroxide.

4,418,057

METHOD OF FORMING STABLE DENTAL GEL OF STANNOUS FLUORIDE

Dennis E. Groat; Richard W. Sell, both of Dallas; Richard J. Kalish, Carrollton, and Horace E. Melton, Irving, all of Tex., assignors to Scherer Laboratories, Inc., Dallas, Tex.

Filed Feb. 9, 1983, Ser. No. 465,107

Int. Cl.³ A61K *7/18, 33/16*

U.S. Cl. 424—151 7 Claims

1. A method for producing a commercial-scale size batch of a stable gel consisting essentially of from aoout 96% to about 98% of anhydrous glycerin, from about 1.8% to about 2.2% of hydroxyethyl cellulose and from about 0.38% to about 0.43% of stannous fluoride wherein the concentration of stannous fluoride in said gel is stable during storage against deterioration to levels below that enabling the use of said gel as a topical treating agent for the prevention of dental caries,

the first stage of said method comprising the sequential steps:

(a) dissolving 50% of the stannous fluoride present in said gel from about 15% to about 18% of the anhydrous glycerin present in said gel at a temperature in the range of from about 150° C. to about 180° C.;

(b) adding a sufficient quantity of anhydrous glycerin to said mixture to reduce the temperature thereof of from about 130° C. to about 150° C.;

(c) dissolving in said mixture 50% of the hydroxyethyl cellulose present in said gel; and

(d) adding to said mixture sufficient anhydrous glycerin to bring the volume thereof up to about 50% of the volume of said gel; and

the second stage of said method comprising repeating the

said sequential steps of said first stage and combining the product of said second stage with the product of said first stage.

4,418,058

PROTECTION OF LYOPHILIZED BETALACTAMS FROM COLOR FORMATION

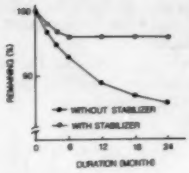
Eizo Hirai, Kawanishi, and Kazuhiro Shima, Yamatokoriyama, both of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Filed Jun. 12, 1981, Ser. No. 272,895

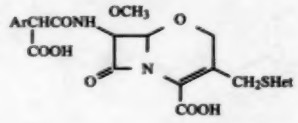
Claims priority, application Japan, Jun. 23, 1980, 55-85789

Int. Cl.³ A61K *31/00, 47/00, 31/535*

U.S. Cl. 424—176 **27 Claims**



1. A stable lyophilized antibacterial preparation containing an alkali metal salt of 7β-(α-carboxy-α-arylacetamido)-7α-methoxy-3-heterocyclic thiomethyl-1-dethia-1-oxa-3-cephem-4-carboxylic acid of the formula



(I)

wherein Ar is a p-hydroxyphenyl group which is unsubstituted or substituted by halogen, hydroxy, 1 to 3 C alkoxy or 1 to 3 C alkyl, and

Het is a 5 to 6 membered monocyclic heterocyclic group having 3 or 4 heteroatoms selected from nitrogen, oxygen or sulfur which is unsubstituted or is substituted by 1 to 5 C alkyl as antibacterial component and 0.1 to 1.0 part per part by weight antibacterial component of a sugar or sugar alcohol compound selected from arabitol, dambonitrol, dulcitol, inositol, mannitol, ononitol, pinitol, quercitol, sequoytol, sorbitol, viburnitol, xylitol, allose, altrose, arabinose, fructose, galactose, glucose, gulose, idose, lactose, lyxose, maltose, mannose, ribose, ribulose, sedoheptulose, sorbose, sucrose, tagatose, talose and xylose as stabilizing agent for the purpose of preventing blue color formation.

4,418,059

NUCLEOSIDE ESTER COMPOSITIONS

Iraj Lalezari, Scarsdale, N.Y., assignor to Montefiore Medical Center and The Albert Einstein College of Medicine at Yeshiva University, both of New York, N.Y., a part interest

Filed Jul. 20, 1981, Ser. No. 285,013

Int. Cl.³ A61K *31/70*; C07H *17/00*

U.S. Cl. 424—180 **5 Claims**

4. An ester of a nucleosidic anti-tumor agent and a carboxylic acid-containing bile acid, wherein the ester is of 5-fluoro-2-deoxyuridine and deoxycholic acid.

5. The ester of claim 4 wherein said ester is admixed with an inert carrier.

4,418,060

THERAPEUTICALLY ACTIVE COMPLEXES OF TETRACYCLINES

Ilona Kahán née László, Budapest; Helga Hammer, and Ilona Bélédi, both of Szeged, all of Hungary, assignors to Medimpex Gyógyszerkülkereskedelmi Vállalat, Budapest, Hungary

Continuation of Ser. No. 862,343, Dec. 20, 1977, abandoned, which is a continuation-in-part of Ser. No. 784,840, Apr. 4, 1977, abandoned, which is a continuation of Ser. No. 302,667, Nov. 1, 1972, abandoned. This application Sep. 17, 1979, Ser. No. 76,337

Claims priority, application United Kingdom, Sep. 6, 1971, 41533/71

Int. Cl.³ C07C *103/19*

U.S. Cl. 424—227 **9 Claims**

1. A complex of a tetracycline and derivatives thereof and an amino compound containing per molecule at least a tris(hydroxyalkyl) group and at least a primary or secondary amino group, said tetracycline being selected from the group consisting of tetracycline, oxytetracycline, chlortetracycline, methacycline, doxycycline, minocycline, demethylchlortetracycline and chelocardin and acid addition salts thereof and said amino compound being selected from the group consisting of tris(hydroxymethyl)amino methane, 1,3-bis[tris(hydroxymethyl)methylamino]-propane, N-tris(hydroxymethyl)methyl-3-aminopropane sulfonic acid, N-tris-(hydroxymethyl)methyl-2-aminomethane sulfonic acid and N-tris(hydroxymethylmethylglycine and salts thereof.

4,418,061

SECALONIC ACID DERIVATIVES AND METHOD FOR PREPARING THEREOF

Mitsuru Shibukawa, Yokohama; Chisei Shibuya, Fuji, and Kunihiko Ishii, Numazu, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

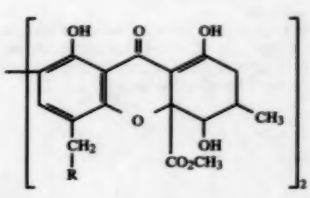
Filed Apr. 7, 1982, Ser. No. 366,333

Claims priority, application Japan, Apr. 16, 1981, 56-56219; Apr. 25, 1981, 56-61916

Int. Cl.³ C07D *405/14*; A61K *31/40*

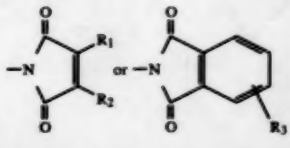
U.S. Cl. 424—245 **7 Claims**

1. A secalonic acid having the formula (I):



(I)

wherein R is



wherein R_1 and R_2 each independently is a hydrogen atom or a C_{1-4} alkyl group; R_3 is a hydrogen atom, a C_{1-4} alkyl group, a C_{1-5} alkoxy group or a halogen atom; and the pharmaceutically acceptable salts thereof.

4,418,062

AMINO DERIVATIVES OF CHLORO NITRO AMINO PYRAZINES USEFUL AS ADJUNCTS TO RADIATION THERAPY

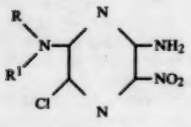
George D. Hartman, Lansdale, Pa., assignor to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 295,446, Aug. 24, 1981, abandoned, which is a continuation-in-part of Ser. No. 194,100, Oct. 6, 1980, abandoned. This application Jul. 19, 1982, Ser. No. 399,924

Int. Cl.³ A61K *31/495;* **C07D** *241/16, 241/20*

U.S. Cl. 424—248.4 **10 Claims**

1. A pharmaceutical composition useful in enhancing the therapeutic effect of radiation treatment comprising an effective amount of a radiation enhancing compound of the formula



wherein R and R^1 are each C_1–C_6 loweralkyl and substituted lower alkyl having one or two amino C_1 lower alkylamino or dialkylamino, lower alkoxy, hydroxy or halo C_1–C_6 loweralkenyl, and substituted lower alkenyl having one or two amino, C_1–C_6 alkylamino or dialkylamino, loweralkoxy, or hydroxy groups or when taken together and linked through an additional nitrogen or oxygen constitutes a 5–7 member saturated heterocyclic ring comprising a morpholine, a piperazine or an N-substituted piperazine wherein the N-substituent is either hydrogen, C_1–C_6 alkyl, C_1–C_6 hydroxyalkyl, C_1–C_6 alkoxyalkyl and a pharmaceutical carrier.

4,418,063

GROWTH PROMOTING QUINOXALINE-DI-N-OXIDE CARBOXAMIDES

Wolfgang Schmid, Therwil, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

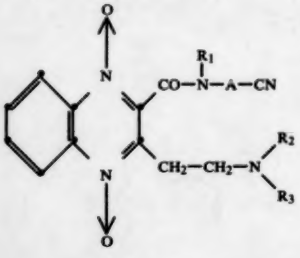
Division of Ser. No. 102,281, Dec. 10, 1979, Pat. No. 4,254,120. This application Dec. 29, 1980, Ser. No. 220,224

The portion of the term of this patent subsequent to Mar. 3, 1998, has been disclaimed.

Int. Cl.³ A61K *27/00, 31/495*

U.S. Cl. 424—248.54 **6 Claims**

1. A method for promoting the growth of animals and of productive livestock which comprises administering to said animals or said productive livestock a growth promoting amount of a compound of the formula



in which

R_1 is hydrogen or alkyl having 1 to 4 carbon atoms, each of R_2 and R_3 is alkyl having 1 to 4 carbon atoms or, together with the nitrogen atom to which they are attached, form a heterocyclic ring which is unsubstituted or substituted by alkyl having 1 to 4 carbon atoms and which has 4 or 5 ring carbon atoms and optionally an oxygen atom as a further hetero atom and,

A is alkylene having 1 to 4 carbon atoms

or an acid addition salt thereof.

4,418,064

CHEMOTHERAPEUTICALLY ACTIVE MAYTANSINOIDS: TREFLORINE, TRENUDINE, AND N-METHYLTRENUDONE

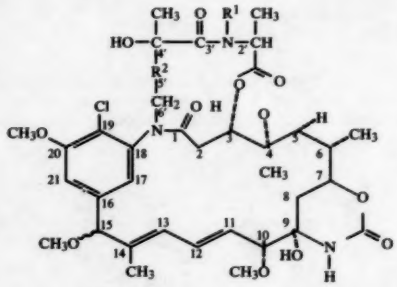
Richard G. Powell, Peoria, and Cecil R. Smith, Jr., Dunlap, both of Ill., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 426,439

Int. Cl.³ A61K *31/535;* **C07D** *498/18*

U.S. Cl. 424—248.54 **8 Claims**

1. A substantially pure compound selected from the group consisting of treflorine, trenudine, and N-methyltrenudone characterized by the formula



wherein for treflorine: R^1=—H and R^2=—CH_2—;
wherein for trenudine: R^1=—H and R^2=—CHOH—; and
wherein for N-methyltrenudone: R^1=—CH_3 and R^2=

5. A chemotherapeutic composition suitable for the remission of leukemia comprising a pharmaceutically acceptable vehicle and an amount effective to promote said remission of a substantially pure compound selected from the group consisting of treflorine, trenudine, and N-methyltrenudone.

4,418,065

HALOPHENYL-PYRIDYL-ALLYLAMINE DERIVATIVES AND USE

Thomas Högberg, Järna; Tomas de Paulis, Södertälje; Svante B. Ross, Södertälje, and Carl B. J. Ulff, Södertälje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

PCT No. PCT/SE80/00286, § 371 Date Jul. 16, 1981, § 102(e) Date Jan. 13, 1981, PCT Pub. No. WO81/01407, PCT Pub. Date May 28, 1981

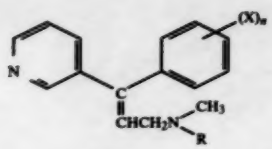
PCT Filed Nov. 14, 1980, Ser. No. 232,043

Claims priority, application Sweden, Nov. 16, 1979, 7909514

Int. Cl.³ A61K *31/44;* **C07D** *213/38*

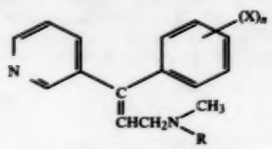
U.S. Cl. 424—263 **24 Claims**

1. A compound of the formula



or a pharmaceutically acceptable salt thereof, in which R is H or CH_3, n is 1 or 2 and X is F bound in any position to the phenyl group.

2. A compound of the formula



or a pharmaceutically acceptable salt thereof, in which R is H or CH_3, n is 1 or 2 and X is I bound in any position to the phenyl group.

4,418,066

PHENYLBENZOYLUREAS

Manfred Böger, Weil am Rhein, Fed. Rep. of Germany, and Josef Ehrenfreund, Allschwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

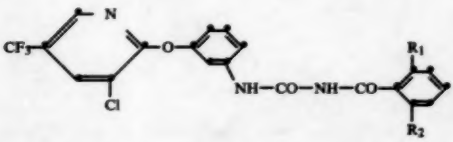
Filed May 13, 1981, Ser. No. 263,320

Claims priority, application Switzerland, May 14, 1980, 3777/80

Int. Cl.³ A01N *43/40*; C07D *213/64*

U.S. Cl. 424—263 **10 Claims**

1. A compound of the formula



wherein

R_1 is fluorine or chlorine and

R_2 is hydrogen, fluorine or chlorine.

9. A method of combatting pests which comprises applying a pesticidally effective amount of a compound according to claim 1 to said pests or to a locus desired to be protected from said pests.

4,418,067

8-[3-(6-FLUORO-1,2-BENZISOXAZOL-3-YL)PROPYL]-1-PHENYL-1,3,8-TRIAZASPIRO[4.5]DEC.5)DECAN-4-ONE TO TREAT PAIN

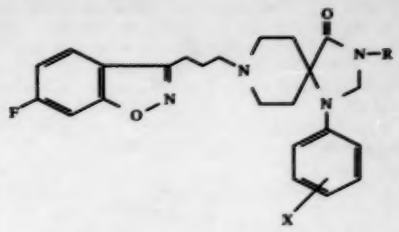
Larry Davis, Sergeantsville, and Joseph T. Klein, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 366,246, Apr. 9, 1982, Pat. No. 4,574,245. This application Nov. 17, 1982, Ser. No. 442,390

Int. Cl.³ A61K *31/445*

U.S. Cl. 424—267 **2 Claims**

1. A method of alleviating pain comprising administering to a mammal in need of pain alleviation a pain alleviating effective amount of a compound of the formula



wherein R is hydrogen or loweralkyl; X is hydrogen, loweralkyl, loweralkoxy, halogen or trifluoromethyl; the optical antipodes thereof, or pharmaceutically acceptable acid addition salts thereof.

4,418,068

ANTIESTROGENIC AND ANTIANDRUGENIC BENZOTHIOPHENES

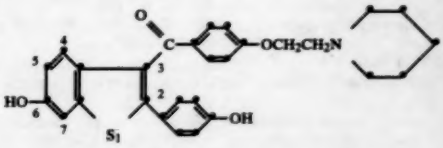
Charles D. Jones, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Continuation-in-part of Ser. No. 246,335, Apr. 3, 1981, abandoned. This application Dec. 16, 1981, Ser. No. 331,042

Int. Cl.³ A61K *31/445*; C07D *409/12*

U.S. Cl. 424—267 **62 Claims**

39. A method of alleviating a pathological condition of an endocrine target organ, which condition is dependent or partially dependent on an estrogen or on an androgen, which comprises administering to a subject suffering from such a condition an effective dose of a compound of the formula



a physiologically acceptble ester or ether thereof, or a physiologically acceptable acid addition salt thereof.

4,418,069

BENZISOSELENAZOLONES AND PROCESS FOR THE TREATMENT OF RHEUMATIC AND ARTHRITIC DISEASES USING THEM

Andre Welter, Cologne, Fed. Rep. of Germany; Leon Christiaens, Nandrin, Belgium, and Ferdinand Wirtz-Peitz, Cologne, Fed. Rep. of Germany, assignors to A. Nattermann & Cie GmbH, Cologne, Fed. Rep. of Germany

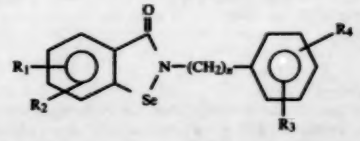
Filed Jul. 9, 1981, Ser. No. 281,719

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1980, 3027075

Int. Cl.³ A61K *31/41*; C07D *293/10, 293/12*

U.S. Cl. 424—269 **4 Claims**

1. A benzisoselenazolone having the general formula I



I

wherein R_1 and R_2 which may be the same or different from

each other, represent hydrogen, fluorine, chlorine, bromine, $C_{1\ to\ 4}$-alkyl, $C_{1\ to\ 4}$-alkoxy, hydroxy, trifluoromethyl, nitro, or R_1 and R_2 together represent the methylenedioxy group —O—CH_2—O—, R_3 and R_4 which may be the same or different from each other, represent hydrogen, fluorine, chlorine, bromine, $C_{1\ to\ 4}$-alkyl, $C_{1\ to\ 4}$-alkoxy, hydroxy, trifluoromethyl, nitro, di-($C_{1\ to\ 4}$-alkyl)-amino or, R_3 and R_4 together, represent the methylenedioxy group —O—CH_2—O— or R_3 represents hydrogen with R_4 being —CN, —$COOR_5$ or

wherein R_5 is hydrogen, an alkali metal ion or $C_{1\ to\ 4}$-alkyl and R_6 being hydrogen, methyl or ethyl, and n is 0 or an integer from 1 to 4, with the exclusion of the compounds of formula I, wherein n is 0, R_1, R_2 and R_3 are hydrogen and R_4 is hydrogen or o-methyl or n is 1 and R_1, R_2, R_3 and R_4 are hydrogen.

4. Process for the treatment of inflammation symptoms of rheumatic and arthritic diseases comprising administering to the being suffering from such disease a compound according to claim 1, 2 or 3 in an amount corresponding to 10 to 1000 mg. per day until the desired degree of alleviation of the symptoms of such disease is achieved.

4,418,070

CARDIOTONIC AGENTS

Tsuneo Okonogi, Yokohama; Shunzo Fukatsu; Mitsugu Hachisu, both of Tokyo; Hiroko Kawashima, Yokohama; Keiko Shitoh, Kawasaki, and Yasuharu Sekizawa, Tokyo, all of Japan, assignors to Meiji Seika Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 4, 1982, Ser. No. 345,672

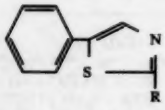
Claims priority, application Japan, Feb. 14, 1981, 56-20490

Int. Cl.³ C07D *277/34*

U.S. Cl. 424—270 **11 Claims**

1. A method for treating cardiac failure conditions, comprising:

administering to a human or animal in need of such treatment a safe and effective amount of a 5-phenylthiazole derivative represented by the formula:



(I)

wherein R represents a hydrogen atom, a lower alkyl group, a hydroxyl group, an amino group, or a mercapto group, or a pharmaceutically acceptable salt thereof.

11. 2-Hydroxy-5-phenylthiazole.

4,418,071

CARDIOTONIC IMIDAZOLECARBOXYLIC ACID DERIVATIVES

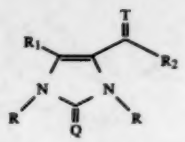
Richard A. Schnettler; Richard C. Dage, both of Cincinnati, Ohio, and J. Martin Grisar, Strasbourg, France, assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed Nov. 4, 1981, Ser. No. 317,956

Int. Cl.³ A61K *31/415*

U.S. Cl. 424—273 R **5 Claims**

1. A method for the treatment of a condition requiring the strengthening of heart action in a patient in need thereof which comprises administering to said patient a cardiotonically effective amount of a compound of the formula



wherein Q and T are each independently an oxygen atom or a divalent sulfur atom; R is hydrogen, lower alkyl, lower alkylcarbonyl or benzoyl; R_1 is hydrogen, or —$CH(R_3)R_4$; R_2 is lower alkoxy, phenoxy or phenoxy substituted at the ortho, meta or para position with lower alkyl, lower alkoxy, hydroxy, halogen, trifluoromethyl, lower alkylthio, lower alkylsulfone or lower alkylsulfoxide; R_3 is hydrogen or lower alkyl; R_4 is hydrogen, hydroxy, lower alkoxy, lower alkylcarbonyloxy, —ONO_2, or halogen; or a pharmaceutically acceptable salt thereof.

4,418,072

DIASTEREOMERIC 1-(4-CHLOROPHENOXY)-1-(1-IMIDAZOLYL)-3,3-DIMETHYL-2-BUTANOL COMPOUNDS AND THEIR ANTIMYCOTIC USE

Wolfgang Krämer; Karl H. Büchel; Ingo Haller, and Manfred Plempel, all of Wuppertal, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

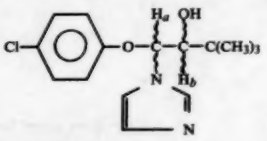
Continuation-in-part of Ser. No. 95,000, Nov. 16, 1979, abandoned. This application Mar. 25, 1981, Ser. No. 247,413

Claims priority, application Fed. Rep. of Germany, Nov. 18, 1978, 2850057

Int. Cl.³ A61K *31/415*; C07D *233/60*

U.S. Cl. 424—273 R **9 Claims**

1. A compound which is the diastereomeric form A of 1-(4-chlorophenoxy)-1-(1-imidazolyl)-3,3-dimethyl-2-butanol of the formula



(I)

or its hydrochloride, said diastereomeric form A of 1-(4-chlorophenoxy)-1-(1-imidazolyl)-3,3-dimethyl-2-butanol having a melting point of 158°–159° C. and its hydrochloride having a melting point of 236°–237° C.

7. A method of combating mycoses in warm-blooded animals which comprises administering to an animal in need thereof, an antimycotically effective amount of an active compound according to claim 1 either alone or in admixture with a diluent or in the form of a medicament.

4,418,073

COMBATING PESTS WITH N-ACYLATED N-METHYL-CARBAMIC ACID O-PYRAZOL-4-YL ESTERS

Fritz Maurer, Wuppertal; Ingeborg Hammann, Cologne; Bernhard Homeyer, Leverkusen, and Wolfgang Behrenz, Overath, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

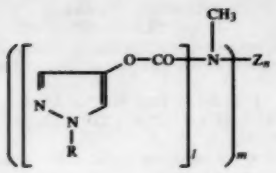
Filed Jun. 8, 1981, Ser. No. 271,080

Claims priority, application Fed. Rep. of Germany, Jun. 25, 1980, 3023675

Int. Cl.³ A01N *43/56*; C07D *231/18*

U.S. Cl. 424—273 P **11 Claims**

1. An N-acylated N-methyl-carbamic acid 0-pyrazol-4-yl ester of the formula



in which

R represents C_1-C_5-alkyl which is optionally substituted by halogen, cyano, C_1-C_4-alkoxy or C_1-C_4-alkylthio, or represents C_3-C_5 alkenyl, C_3-C_5-alkynyl or C_3-C_6-cycloalkyl, or represents an optionally halogen-substituted phenyl, benzyl or phenylethyl radical,

Z represents the radical $—S_r(O)_sR^4$,

r represents 1 or 2,

s represents zero, 1 or 2, and

R^4 represents optionally halogen-substituted C_1-C_4-alkyl, C_3-C_5-alkenyl, C_3-C_5-alkynyl or C_3-C_6-cycloalkyl, or represents a phenyl, benzyl or phenylethyl radical which is optionally substituted by halogen, cyano, nitro, trifluoromethyl, C_1-C_4-alkyl or C_1-C_4-alkoxy,

when each of l, m and n represents 1; or Z represents sulfur when l is 1, m is 2 and n is 1; and when n represents zero, l is 2 and m is 1.

7. A method of combating pests comprising applying to the pests, or to a habitat thereof, a pesticidally effective amount of a compound according to claim 1.

4,418,074

2,6 DI(T-BUTYL)-4-(2'-PYRROL)-PHENOL AND ANTI-INFLAMMATORY USE THEREOF

George G. I. Moore, Houlton, Wis., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Filed Nov. 23, 1981, Ser. No. 324,061

Int. Cl.³ C07D *207/333;* A61K *31/40*

U.S. Cl. 424—274 4 Claims

1. The compound 2,6-di(t-butyl)-4-(2'pyrroyl)phenol.

3. A method for combatting inflammatory reactions in a mammal which comprises administering to said mammal an effective dose, less than a toxic amount, of a composition according to claim 2.

4,418,075

EPOXYSUCCINYL AMINO ACID DERIVATIVES

Masaharu Tamai; Shigeo Morimoto; Takashi Adachi; Kiyoshi Oguma; Kazunori Hanada, and Sadafumi Omura, all of Saitama, Japan, assignors to Taisho Pharmaceutical Co., Ltd., Japan

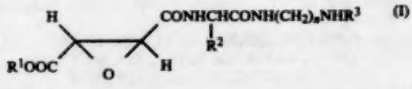
Continuation-in-part of Ser. No. 149,312, May 13, 1980. This application Nov. 10, 1981, Ser. No. 320,113

Claims priority, application Japan, May 17, 1979, 54-60858

Int. Cl.³ C07D *303/48;* A61K *31/335*

U.S. Cl. 424—278 5 Claims

1. An epoxysuccinyl amino acid derivative of the formula



(I)

wherein R^1 is hydrogen or alkali metal, R^2 is isobutyl, R^3 is hydrogen or benzyloxycarbonyl, and n is an integer of 5 to 7.

4,418,076

7-OXABICYCLOHEPTANE HYDRAZONE PROSTAGLANDIN ANALOGS USEFUL IN TREATING THROMBOLYTIC DISEASES

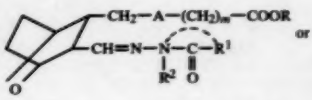
Masami Nakane, Plainsboro; Joyce Reid, Dayton, and Martin F. Haslanger, Lambertville, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed May 3, 1982, Ser. No. 374,125

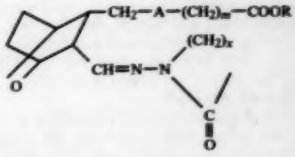
Int. Cl.³ A61K *31/34;* C07D *307/00*

U.S. Cl. 424—285 13 Claims

1. A compound having the structural formula



or



and including all stereoisomers thereof wherein

A is CH=CH or $(CH_2)_2$;

m is 1 to 8;

R is H or lower alkyl; R^2 is H or lower alkyl; and

R^1 is lower alkoxy and x is 3, 4 or 5.

4,418,077

FLUORINATED AMINO-BUTYRIC ACID AND DIAMINOBUTANE DERIVATIVES

Philippe Bey, Strasbourg, France; Fritz Gerhart, Kehl-Leutesheim, Fed. Rep. of Germany; Michel Jung, Illkirch-Graffenstaden, and Daniel Schirlin, Bischeim, both of France, assignors to Merrell Toraude et Compagnie, Strasbourg, France

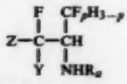
Filed Aug. 21, 1981, Ser. No. 295,060

Claims priority, application United Kingdom, Aug. 23, 1980, 8027504

Int. Cl.³ C07C *87/22, 87/28, 101/24;* A61K *31/13*

U.S. Cl. 424—309 20 Claims

1. A compound of the formula:



wherein:

Y is hydrogen or fluorine;

Z is $—CH_2NR_1R_2$, where R_1 and R_2 are as defined below, or $—COR_3$ where R_3 is as defined below;

R_a is hydrogen or R_4, where R_4 is as defined below;

R_1 is hydrogen, C_1–C_8alkyl or phenyl-(C_1–C_4alkyl);

R_2 is hydrogen, C_1–C_8alkyl, phenyl-(C_1–C_4alkyl), or, when R_a is hydrogen, R_4, where R_4 is as defined below;

R_3 is hydroxy, or, when R_a is hydrogen, C_1–C_8alkoxy, $—NR_5R_6$, where R_5 and R_6 are as defined below, or an aminocarboxylic acid residue derived by removal of an hydrogen atom from the amino moiety of glycine or an L-aminocarboxylic acid of the formula $NH_2CH(R_7)CO_2H$ wherein R_7 is C_1–C_4alkyl, aminopropyl, aminobutyl, benzyl, or p-hydroxybenzyl;

each R_4, independently, is C_2–C_5alkylcarbonyl, phenylcar-

bonyl, phenyl-(C_1–C_4alkyl)carbonyl, or an aminocarboxylic acid residue derived by removal of an hydroxy group from the carboxy moiety of glycine or an L-aminocarboxylic acid of the formula HO—$COCH(R_7)NH_2$ or HO—$CO(CH_2)_nCH(NH_2)CO_2H$ wherein R_7 is C_1–C_4alkyl, aminopropyl, aminobutyl, benzyl, or p-hydroxybenzyl and n is 1 or 2;

R_5 and R_6, independently, are hydrogen or C_1–C_4alkyl; and p is 1 or 2,

or a pharmaceutically acceptable salt thereof.

19. A pharmaceutical composition for inhibiting gamma-aminobutyric transaminase comprising an effective amount of a compound as defined in claim 1 and a pharmaceutically acceptable carrier.

4,418,078

METHOD OF TREATING TUMORS IN WARM-BLOODED ANIMALS

Keith C. Murdock, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 965,114, Nov. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 873,041, Jan. 30, 1978. This application Aug. 27, 1979, Ser. No. 69,672

Int. Cl.[3] **H61K** *31/135*

U.S. Cl. 424—330 **1 Claim**

1. A pharmaceutical composition in dosage unit form comprising from about 5 to about 200 milligrams of a compound selected from the group consisting of 1,4-bis(3-aminopropylamino)-5,8-dihydroxyanthraquinone, the leuco base or tautomer thereof, and the pharmacologically acceptable acid-addition salts thereof; in association with a pharmaceutical carrier.

4,418,079

CONJUGATED KETONE COMPOUNDS IN PREVENTING PLATELET THROMBOSIS

Atsuyuki Kojima; Tsunemasa Irie, both of Hyogo; Shuichi Harada, Osaka; Yoshito Kameno, Osaka; Junki Katsube, Osaka, and Hisao Yamamoto, Hyogo, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

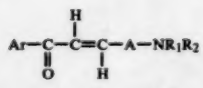
Division of Ser. No. 217,043, Dec. 16, 1980, abandoned, which is a continuation of Ser. No. 973,639, Dec. 27, 1978, abandoned. This application Dec. 29, 1981, Ser. No. 335,522

Claims priority, application Japan, Jan. 13, 1978, 53-2938; Jan. 13, 1978, 53-2939

Int. Cl.[3] **A61K** *27/00, 31/34, 31/36, 31/38, 31/40, 31/44, 31/135, 31/445*

U.S. Cl. 424—330 **11 Claims**

1. A method for the prevention of platelet thrombosis which comprises administering to warm-blooded animals an effective blood platelet anti-aggregative amount of at least one compound of the formula



wherein Ar is naphthyl, furyl, thienyl or phenyl optionally bearing one or more substituents selected from the group consisting of chlorine, bromine, C_1–C_4 alkyl, C_1–C_4 alkoxy, C_1–C_4 alkylthio, trifluoromethyl and methylenedioxy, R_1 is C_1–C_6 alkyl, C_3–C_5 alkenyl, C_3–C_6 cycloalkyl, C_7–C_8 aralkyl or adamantyl, R_2 is C_1–C_6 alkyl, C_3–C_5 alkenyl or C_3–C_6 cycloalkyl, or when R_1 and R_2 are taken together with the nitrogen atom to which they are attached, they form a heterocyclic amino group containing up to 8 carbon atoms, A is straight or branched C_1–C_3 alkylene, N-[4-(p-chlorophenyl)-4-oxo-2-trans-butenyl]morpholine and N-[4-(p-methoxyphenyl)-4-oxo-2-trans-butenyl]piperidine being excluded or a non-toxic salt thereof and at least one pharmaceutically acceptable inert carrier or diluent.

4,418,080

NATURAL RED COLORING PREPARED FROM WHEAT AND BARLEY SUBSTRATES

Mao Yueh, Barrington, and Stephan A. Rashbaum, Evanston, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Jul. 6, 1981, Ser. No. 280,618

Int. Cl.[3] **A23L** *1/27, 1/28;* **C12P** *1/02;* **C12N** *1/14*

U.S. Cl. 426—18 **5 Claims**

1. A method for imparting a red, meaty color to a food product comprising culturing a mold of the genus Monascus on a grain substrate selected from the group of wheat and barley, to obtain red pigments thereon, wherein the step of culturing the Monascus mold comprises:

a. preparing a nutrient solution by mixing water with a salt selected from the group consisting of $MgSO_4$, KH_2PO_4, $NaNO_3$;

b. submerging a grain substrate selected from the group of barley and wheat grain flour or steel cut grain in the nutrient solution to form a grain and nutrient solution;

c. inoculating said grain and nutrient solution with *Monascus purpureus* mold;

d. agitating the mold-inoculated grain and nutrient solution to aerate;

e. incubating the *Monascus purpureus* mold in the agitated grain and nutrient solution, yielding a red pigmented grain product; and

f. adding the red pigmented grain product as an ingredient to a food product.

4,418,081

NATURAL RED COLORING PREPARED FROM AN OAT SUBSTRATE

Stephan A. Rashbaum, Evanston, and Mao Yueh, Barrington, both of Ill., assignors to The Quaker Oats Company, Chicago, Ill.

Filed Jul. 6, 1981, Ser. No. 280,617

Int. Cl.[3] **A23L** *1/27, 1/28;* **C12P** *1/02;* **C12N** *1/14*

U.S. Cl. 426—18 **4 Claims**

1. A method for imparting a red, meaty color to a food product comprising culturing a mold of the genus Monascus which produces pigment of the Monascorubrin or Rubropunctatin type on an oat substrate to obtain red pigments thereon, drying and subdividing said oat substrate into a finely-divided form, and adding said finely divided substrate to said food product in an amount effective to impart a red color to said food product, wherein the step of culturing the Monascus mold comprises:

a. cutting oat groats so that each oat groat is cut into at least three individual pieces;

b. moistening said cut oat groats to about 30% moisture content and sterilizing said moistened groats;

c. innoculating and culturing said sterilized moist, cut oat groats with a Monascus mold selected from the group of Monascus mold which produces pigments of the Monascorubrin or Rubropunctatin type;

d. maintaining said moisture level at about 30% throughout said culturing step; and

e. incubating said Monascus mold on said oat substrate.

4,418,082

IMPROVED FRUIT COMPOSITION HAVING A DEPRESSED FREEZING POINT

Marvin L. Kahn, Williamsville, and John S. O'Mahony, Amherst, both of N.Y., assignors to Rich Products Corporation, Buffalo, N.Y.

Division of Ser. No. 168,903, Jul. 14, 1980, Pat. No. 4,356,195. This application Dec. 9, 1981, Ser. No. 329,006

Int. Cl.[3] **A23L** *1/212;* **C12P** *19/24*

U.S. Cl. 426—51 **11 Claims**

1. A citrus fruit containing juice the freezing point of which has been depressed by the steps of adding to said citrus fruit

containing at least about 1% sucrose based on the weight of the fresh fruit, an enzyme capable of converting at least about 21% of the naturally present sucrose within said fruit into fructose.

4,418,083

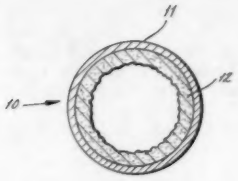
PROCESS OF MAKING HOLLOW DRIED GRAPE

Howard F. McKinney; Frederick C. Wear, both of St. Louis County, and Harold L. Sandy, St. Charles, all of Mo., assignors to McDonnell Douglas Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 167,688, Jul. 11, 1980, abandoned. This application Jul. 29, 1982, Ser. No. 403,141

Int. Cl.³ A23B 7/00; A23L 3/26

U.S. Cl. 426—242 **4 Claims**



1. A process for making dried grapes comprising the steps of:
(a) removing bloom from fresh grapes,
(b) drying the grapes from about 20% moisture to less than about 10% moisture in an environment containing less than about 2% oxygen and at a pressure of less than about 40 Torr,
(c) raising the temperature of the grapes to between about 170° F. to about 200° F. in said reduced pressure environment for a time sufficient to rigidify the sugar structure in the grapes,
(d) cooling the grapes to below about 100° F. while maintaining said reduced atmosphere, and
(e) recovering hollow substantially round intact grapes having substantially the same size and color as the fresh grapes.

4,418,084

NEUTRAL PROTEIN BEVERAGE

Edward D. Murray, Winnipeg; Brenda J. Woodman, Port Hope; Terrence J. Maurice, Colborne, and Robert R. Sirett, Cobourg, all of Canada, assignors to General Foods Inc., Don Mills, Canada

Filed Feb. 23, 1979, Ser. No. 14,657

Claims priority, application Canada, Mar. 21, 1978, 299433

Int. Cl.³ A23J 1/12, 1/14

U.S. Cl. 426—250 **7 Claims**

1. A process for the production of a dry protein composition capable of rapid dispersion in water to provide a stable protein dispersion having a pH greater than about 6.2 and up to a pH of about 8.0, said process comprising:
(a) extracting protein from a protein source material with an aqueous food grade salt solution at a temperature of about 15° to about 35° C, a salt concentration of about 0.2 to about 0.8 ionic strength and a pH of about 5.5 to about 6.5,
(b) diluting the resulting protein solution to an ionic strength of less than about 0.1 to form an aqueous dispersion of protein micelles consisting of amphiphilic protein moieties,
(c) settling the solid phase from said aqueous dispersion to form a protein micellar mass,
(d) separating said settled protein micellar mass from the residual aqueous phase,
(e) homogeneously mixing said separated protein micellar mass with sufficient at least one food grade buffering agent to provide on dispersion in water said stable protein dispersion having a pH of about 6.2 to about 8.0, and
(f) drying the resulting homogeneous mixture to a powder.

4,418,085

PROCESS FOR MANUFACTURING FROZEN FOOD PRODUCTS COMPOSED OF LAYERS OF PASTA AND SAUCE

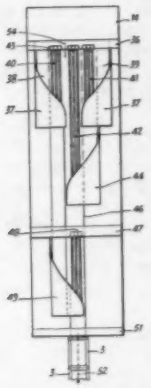
Louis E. Becquelet, Alfortville, France, assignor to Nultoni Foods Corporation, South Hackensack, N.J.

Filed Sep. 17, 1982, Ser. No. 419,279

Claims priority, application France, Sep. 17, 1981, 81 17546

Int. Cl.³ A23L 1/16

U.S. Cl. 426—297 **10 Claims**



1. A process for automatically and continuously manufacturing food products, comprising the sequential steps of:
mixing a plurality of ingredients into a mixer to form dough;
extruding said dough from said mixer to form a continuous sheet of pasta having first (38), second (40), third (42), fourth (41), and fifth (39) adjacent longitudinal surface area rows;
passing said continuous sheet of pasta under a first sauce dispenser;
dispensing first sauces from said first sauce dispenser onto said second, third, and fourth adjacent surface area rows, said second, third and fourth adjacent surface area rows being between first and second outer end surface area rows which comprise said first and fifth surface area rows;
first folding said respective first and fifth surface area rows by means of first and second guides (37) over said second and fourth surface area rows, respectively, said respective first and fifth surface area rows substantially covering said second and fourth surface area rows, said second and fourth area rows being spaced apart along a widthwise direction of said sheet of pasta and being on opposite sides of said third surface area row;
second folding said fourth and fifth surface area rows over said third surface area row by means of a third guide (44);
dispensing additional sauce over one of said first and fourth surface area rows by means of a second sauce dispenser (47);
third folding said one of said first and fourth surface area rows which does not have said additional sauce dispensed thereon over said one of said first and fourth surface area rows which has said additional sauce dispensed thereon by means of a fourth guide (49), said continuous sheet of pasta continuously passing said first sauce dispenser, passed said first, second and third guides, passed said second sauce dispenser and passed said fourth guide.

4,418,086

EXPANDED TEXTURED PROTEIN PRODUCT AND METHOD FOR MAKING SAME

Richard P. Marino, Bedford Hills; Richard J. Rothamel, Ossining, both of N.Y., and William C. Rieken, Jackson, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Jan. 28, 1982, Ser. No. 343,603

Int. Cl.³ A23L *1/31;* A23J *3/00*

U.S. Cl. 426—302 2 Claims

1. A method for preparing an expanded, resilient protein product which has an open cellular, fibrous structure, a fat content of at least 5% up to about 35% dry weight basis, and a moisture content of from 15% to 30% by weight. The steps comprising:

(a) forming a mixture containing, on a weight basis, 10% to 40% fresh meat, 12% to 25% soy flour, 1% to 20% combined wheat and corn, 0.01% to 2.5% elemental sulfur or a sulfur compound, and from 1% to 10% of a polyhydric alcohol plasticizing agent, said mixture being free of any non-proteinacious and non-farinaceous extrusion agent and said mixture containing sufficient water to produce the 15% to 30% moisture content in the expanded product;

(b) heating the mixture of step (a) to a temperature of above 280° F. while mechanically working the heated mixture at a pressure above 100 psig in a twin screw extruder;

(c) extruding the mixture from the twin screw extruder such that the mix expands from about 1.75 to 2.25 times in size as compared to the orifice size;

(d) cutting the extruded material into chunks; and

(e) coating the chunks with a layer of a palatability improving material.

4,418,087

MIXTURE OF 4,4A,5,6-TETRAHYDRO-7-METHYL-2-(3H)-NAPHTHALENONE AND BENZODIOXANONES AND USE THEREOF IN AUGMENTING OR ENHANCING THE AROMA OR TASTE OF CONSUMABLE MATERIALS

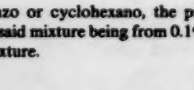
Alan O. Pittet, Atlantic Highlands; Ranya Muralidhara, Fair Haven, and Myrna L. Hagedorn, Edison, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 368,640, Apr. 15, 1982, which is a continuation-in-part of Ser. No. 354,111, Mar. 2, 1982, abandoned. This application Apr. 7, 1983, Ser. No. 482,762

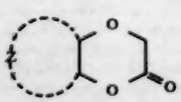
Int. Cl.³ A23L *1/226;* A61K *7/46*

U.S. Cl. 426—536 2 Claims

1. A composition of matter comprising 4,4A,5,6-tetrahydro-7-methyl-2-(3H)-naphthalenone having the structure:



and intimately admixed therewith at least one bicyclic compound defined according to the generic structure:



wherein Z is benzo or cyclohexano, the proportion of said naphthalenone in said mixture being from 0.1% up to 99.9% by weight of said mixture.

4,418,088

PROCESS FOR PREPARING A FOOD PRODUCT

Francois Cantenot, St. Usage, France, assignor to M.B.E. Minoterie Biscotterie d'Echenon, Saint Jean de Losne, France

Filed Nov. 4, 1981, Ser. No. 318,154

Claims priority, application France, Nov. 10, 1980, 80 23975

Int. Cl.³ A21D *13/04*

U.S. Cl. 426—549 12 Claims

1. Process for manufacturing a food product, comprising the steps of intimately mixing the following substances in units by weight:

100 units of flour at a rate of 10 to 60 units of roast corn flour and the complement composed of wheat flour;

from 1 to 5 units of sugar;

from 0 to 3.5 units of milk;

from 0 to 3.5 units of fat;

about 1 unit of salt,

shaping the mixture and baking it simultaneously and continuously by extrusion-baking at a temperature higher than 100° C. to provoke a vaporization of water, and cooling the extruded-baked mixture immediately after extrusion to condense the water vaporized during baking and provoke the formation of cells.

4,418,089

METHOD AND APPARATUS FOR PRODUCING A CELLULAR FOOD PRODUCT

David W. Bouette, Macclesfield, England, assignor to Simon-Vicars Limited, Merseyside, England

Filed Feb. 9, 1982, Ser. No. 347,347

Int. Cl.³ A23G *1/10, 3/00*

U.S. Cl. 426—572 14 Claims

1. A method of making a cellular chocolate product, comprising the steps of heating a supply of chocolate to bring it to a molten state, introducing into the molten chocolate under pressure a gas which is largely soluble in the chocolate, feeding the molten chocolate under pressure into a mixing device having closely adjacent relatively movable mixing parts, operating the mixing device to disperse the gas uniformly, so that it is dissolved throughout the molten chocolate, passing the molten chocolate through a restricted orifice to release the pressure suddenly to atmosphere, so that the dissolved gas forms gaseous bubbles within the chocolate, and solidifying the molten chocolate into a finally resulting cellular chocolate product by cooling, the clearance between the closely adjacent relatively movable mixing parts of the mixing device being less than half the minimum transverse dimension of the orifice.

4,418,090

STARCH CONTAINING FOOD PRODUCTS AND PROCESS FOR PREPARING SAME

Hans Bohrmann, Talheim; Thomas Campbell, Fein; Werner Grigoteit, Unterheinriet, and Günter Müller, Fein, all of Fed. Rep. of Germany, assignors to CPC International Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 237,304, Feb. 23, 1981, which is a continuation of Ser. No. 59,415, Jul. 20, 1978, abandoned. This application May 19, 1982, Ser. No. 379,676

Claims priority, application United Kingdom, Jul. 31, 1978, 31695/78

Int. Cl.³ A23L *1/195, 1/40*

U.S. Cl. 426—578 9 Claims

1. A prepared, dry food product having a thickening component, said food product being intended for reconstitution by direct addition to boiling aqueous liquid and which in part comprises

a thickening component comprising a modified root starch or tuber starch having retarded thickening properties

wherein said modified starch is prepared by

(a) heating native starch having a moisture content from about 16% to 35% by weight, in a closed system at a temperature from 55° C. to about 135° C. for a sufficient

time period to impart to the starch the characteristic of retarded thickening,

(b) cooling and drying the starch prepared in step (a).

4,418,091

PROCESS FOR PREPARING A DRY, POWDERY MILK PRODUCT

Cor Glas, Tietjerk, Netherlands, assignor to Centrale Veevoederfabriek "Sloten", Leeuwarden, Netherlands

Continuation of Ser. No. 196,429, Oct. 14, 1980, abandoned. This application Aug. 16, 1982, Ser. No. 408,570

Claims priority, application Netherlands, Oct. 17, 1979, 7907654

Int. Cl.³ A23C 9/16, 21/06

U.S. Cl. 426—580 **6 Claims**

1. In a process for preparing a dry, powdery milk product comprising at least one whey product, homogenized fat, from 0.1 to 10% by weight of at least one saturated or unsaturated mono-, di-, or tri-carboxylic acid and/or hydroxycarboxylic acid having up to 6 carbon atoms, salts thereof or mixtures thereof by homogenizing one or a number of fats in a milk liquid, drying the resultant liquid mixture and mixing the resultant dried mixture with the acids and/or salts to form an end product, the improvement wherein:

a. said whey product is selected from the group consisting of whey, delactosed whey, whey permeate, delactosed whey permeate and whey protein obtained after ultrafiltration;

b. said milk liquid contains all or a portion of said whey product or a mixture thereof with low fat milk or products derived from said two starting materials;

c. said resultant liquid mixture with said fat homogenized therein is dried to provide an intermediate dry product (fatty core) containing up to 40% by weight of fat; and

d. said intermediate dry product is mixed with said acid, salt or mixture thereof, with any remainder of said whey product or mixture thereof with low fat milk or products derived from said two starting materials in dry powdery form and with at least 0.05% by weight of lecithin in the form of a dry, concentrated powdery composition to obtain said dry powdery milk product,

at least 25% and up to 100% of the protein in said dry powdery milk product being derived from said whey product, the fat content being derived from said intermediate dry product and ranging up to 17.5% by weight of said dry powdery milk product, and said dry powdery milk product, when dissolved into cold water or a cold aqueous product, having a pH in the range of 4.0 to 6.0 and being useful for feeding calves, lambs and goats.

4,418,092

PRESERVATION OF HOPS

Churchill G. Blackwell, 1008 S. Cherry, Unit B-101, Denver, Colo. 80222

Filed Feb. 4, 1982, Ser. No. 345,775

Int. Cl.³ C12C 3/04, 9/02

U.S. Cl. 426—600 **10 Claims**

1. A brewing composition adapted for use in brewing beer or ale, comprising:

a fermentable hydroscopic powdered sugar, and granulated hops having a particle size less than or equal to one millimeter in diameter and having a moisture content of 0.2% to 16% by weight, said hops being intimately mixed with an equal or greater amount by weight of said hydroscopic powdered sugar.

4,418,093

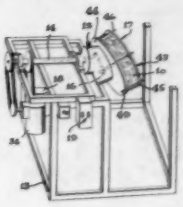
METHOD FOR DISTRIBUTING MATERIAL INSIDE A TIRE CASING

Edward N. Gomberg, Hixon, and James O. B. Wright, Chattanooga, both of Tenn., assignors to Synair Corporation, Chattanooga, Tenn.

Filed Mar. 26, 1982, Ser. No. 362,342

Int. Cl.³ B05D 7/22, 7/02

U.S. Cl. 427—8 **5 Claims**



1. A method of producing an elastomeric liner insitu within a pneumatic tire casing comprising the steps of:

(a) mounting a tire casing for rotation about a spin axis;

(b) introducing a liquid mixture of material adapted to cure to an elastomer into the interior of said tire casing;

(c) rotating said tire casing about spin axis at a first speed to distribute said material about the interior periphery of said tire casing;

(d) rotating said tire casing about a second axis before said material has polymerized, said second axis being at an angle to and intersecting said spin axis at a fixed point whereby said tire casing oscillates and causes said unpolymerized material to spread across the bottom and contiguous portions of the sidewalls of the inner periphery of the tire casing; and

(e) continuing said oscillating movement of said tire casing until said material is polymerized to the point of non-flowability.

4,418,094

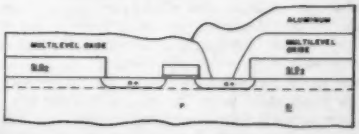
VERTICAL-ETCH DIRECT MOAT ISOLATION PROCESS

Yee-Chaung See, Plano; Roderick D. Davies, Richardson, and Dennis C. Hartman, Plano, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 2, 1982, Ser. No. 353,994

Int. Cl.³ H01L 27/00

U.S. Cl. 427—38 **9 Claims**



1. A process for forming integrated circuit device structures, comprising the steps of:

providing a silicon substrate;

forming a uniform oxide layer on said substrate;

etching windows in said oxide to expose selected moat regions of said substrate;

forming a thin gate oxide layer within said respective moat regions;

depositing polysilicon on exposed surfaces;

patterning said polysilicon to define selected gate regions within said moat regions;

etching said polysilicon where exposed by said gate patterning step;

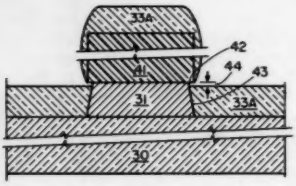
forming a plurality of respective sources and drains within respective ones of said moats; and
forming a plurality of respective contacts to respective ones of said sources, drains, and gates,
wherein said oxide etch is anisotropic and selective over silicon, and does not deposit substantial quantities of polymers in said moat regions;
and wherein said polysilicon etch is anisotropic and has a selectivity over oxide which is greater than 15;
whereby an MOS integrated circuit structure is formed.

4,418,095

METHOD OF MAKING PLANARIZED JOSEPHSON JUNCTION DEVICES

Peter L. Young, North Wales; Barry F. Stein, Dresher, and John E. Sheppard, Cornwells Heights, all of Pa., assignors to Sperry Corporation, New York, N.Y.

Filed Mar. 26, 1982, Ser. No. 362,578
Int. Cl.³ H01L *39/24*
U.S. Cl. 427—63 **11 Claims**



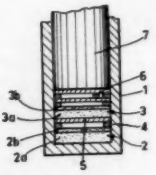
1. A method of making planarized Josephson junction devices having raised base electrodes, comprising the steps of:
providing a substantially non-porous dielectric substrate,
evaporating and depositing a uniform layer of base electrode material on said substrate in a vacuum chamber,
applying a photoresist pattern on said base electrode layer which defines a base electrode area,
etching away portions of said base electrode material leaving a discrete tapered raised base electrode having a ledge undercut below the photoresist pattern area,
placing said substrate in a vacuum chamber disposed at a predetermined offset angle from a source of planarizing insulation material,
rotating said offset substrate,
evaporating and depositing a planarizing insulation layer to form a uniform layer on said substrate which connects to the sides of said tapered raised base electrode under said ledge of said photoresist pattern leaving a horizontal gap between the top of said planarizing insulation layer on said substrate and the bottom of said photoresist pattern,
dissolving said planarizing insulation layer coated photoresist pattern by introducing liquid solvent through said gap under said ledge of said photoresist pattern,
removing the remaining photoresist pattern and said planarizing insulation layer thereon leaving the top of said tapered raised base electrode exposed and planarized within said uniform planarizing insulation layer having undulations of approximately 400 angstroms or less
applying a second photoresist pattern to provide a mushroom shaped isolated photoresist area on a portion of said base electrode where a tunnel barrier junction will be formed,
evaporating and depositing a via insulation layer over the planarized layers, part of said base electrode, and said second photoresist pattern,
dissolving said mushroom shaped photoresist pattern,
removing the remaining photoresist pattern and the via insulation layer coated thereon leaving a via aperture at said tunnel barrier junction area in said via insulation layer,
applying a third photoresist pattern over said via insulation layer defining an open counter electrode area,
oxidizing the exposed base electrode material in the bottom of said via aperture to form a tunnel barrier junction,
evaporating and depositing counter electrode material in said open counter electrode area of said third photoresist pattern, and
removing said third photoresist pattern leaving a planarized Josephson junction device comprising two electrodes and a tunnel barrier junction therebetween.

4,418,096

PROCESS FOR PREPARING LAYERS OF $HG_{1-x}CD_xTE$

André Gauthier, Paris, and Jean C. F. Morand, Ozoir-la-Ferriere, both of France, assignors to Societe Anonyme de Telecommunications, France

Continuation of Ser. No. 161,916, Jun. 23, 1980, abandoned. This application Nov. 19, 1981, Ser. No. 322,932
Claims priority, application France, Jun. 29, 1979, 79 17014
Int. Cl.³ B05D *3/04*
U.S. Cl. 427—76 **6 Claims**



1. A process for preparing layers of an alloy $Hg_{1-x}Cd_xTe$ useful in the manufacture of infrared detectors, comprising the steps of introducing into a tube a wafer having a substrate of Cd Te and a superficial layer of $Hg_{1-y}Cd_yTe$, the value of y being less than the desired value of x, applying a mask above the wafer adding a quantity of mercury above the mask, introducing a piston into the tube for holding the whole in position, creating a vacuum inside the tube, sealing the tube, placing the tube in a furnace whose temperature is between 350° C. and 750° C. to subject the wafer to a thermal interdiffusion treatment without decomposing the layer of $Hg_{1-y}Cd_yTe$.

4,418,097

COATING FOR GRAPHITE ELECTRODES

Mohan S. Misra, Lakewood, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Filed Dec. 11, 1981, Ser. No. 329,896
Int. Cl.³ B05D *5/12*
U.S. Cl. 427—113 **3 Claims**

1. A process for reducing high temperature oxidation of a graphite electrode by forming on said electrode an outer coating of SiO_2 powder and a subsurface coating of SiC bonded to the electrode surface, said process consisting of the steps of:
(a) suspending SiC particles in a dimethylpolysiloxane fluid;
(b) coating said electrode with the SiC-dimethylpolysiloxane fluid; and
(c) heating said electrode to thereby facilitate the formation of said outer coating of SiO_2 powder and said subsurface coating of SiC.

4,418,098

IMAGING MEDIA CAPABLE OF DISPLAYING SHARP INDICIA

Anthony R. Maistrovich, Lake Elmo, Minn., assignor to Minnesota Mining & Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 182,974, Sep. 2, 1980, abandoned. This application Feb. 12, 1982, Ser. No. 348,653

Int. Cl.³ B05D 5/00; B32B 3/26; B41M 5/00

U.S. Cl. 427—161 12 Claims

1. In sheet material of the type wherein a base sheet is coated on at least one face with a layer comprising a first organic polymer containing interconnected microvoids, said layer being locally transparentizable to display contrasting indicia when there is applied to its exposed surface a transparent, colorless liquid which has a refractive index similar to that of the solid constituents of the layer but which is a non-solvent for said first polymer,

the improvement comprising, incorporated in said layer, a second organic polymer which has a solubility parameter differing from that of the liquid by about 2 hildebrands and which jellifies the liquid,

whereby the indicia maintain substantially the same dimensions throughout the time that the layer is locally transparentized.

11. The sheet material of claim 1 provided with contrasting indicia that maintain substantially the same dimensions during their period of visibility, said indicia being formed by localized transparentization of the microvoid-containing layer resulting from the presence of a transparent, colorless liquid that is a non-solvent for the solid constituents of the microvoid-containing layer and has a solubility parameter differing from that of the second organic polymer by about 2 hildebrands.

4,418,099

NON-BURNISHED PRECIOUS METAL COMPOSITION

Danilo L. Cuevas, Kearney; Frank R. Russo, North Brunswick, and Francis E. Schindler, East Brunswick, all of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Feb. 5, 1982, Ser. No. 346,346

Int. Cl.³ B06D 3/02

U.S. Cl. 427—229 26 Claims

1. A coating composition for glass or ceramic which, when fired, produces a lustrous satin burnished appearance without burnishing which comprises in combination:

(a) a vehicle or solvent;

(b) at least one precious metal metallo-organic component;

(c) at least one base metal metallo-organic component; and

(d) at least one non-metallic luster pigment.

4,418,100

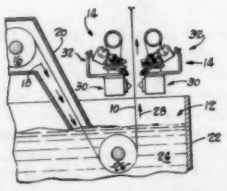
APPARATUS AND METHOD FOR REDUCING SPANGLE IN GALVANIZED PRODUCTS

Junion L. Bedwell, and Harold C. Overton, both of Gadsden, Ala., assignors to Republic Steel Corporation, Cleveland, Ohio

Filed Feb. 2, 1982, Ser. No. 344,998

Int. Cl.³ B05D 3/04, 3/12, 1/18

U.S. Cl. 427—348 18 Claims



14. A method of coating and cooling a substrate in a manner to reduce spangle, the method comprising steps of:

coating a substrate with a molten coating material,

screeding the coating material on the substrate by impinging air from an air knife thereagainst, and

directing a gas and liquid spray directly toward the coated substrate at a location sufficiently close to where air from said air knife has impinged the coated substrate to have the air from the air knife materially affect the spray flow.

4,418,101

METHOD OF MAKING THERMOPLASTIC HARDBOARD FROM ACETYLATED MAT

Cynthia B. House, Arlington Heights, Ill., and Robert J. Leichti, Auburn, Ala., assignors to United States Gypsum Company, Chicago, Ill.

Division of Ser. No. 213,263, Dec. 5, 1980, Pat. No. 4,388,378. This application Dec. 27, 1982, Ser. No. 453,859

Int. Cl.³ B32B 23/04; D21F 11/00

U.S. Cl. 427—393 9 Claims

1. A method for acetylating wood fiber comprising the steps of forming said wood fiber into a substantially dry mat, coating the mat with from about 5% to about 70% by volume of acetic anhydride, enclosing the mat in a sealed space, heating the enclosed mat at a temperature of from about 150° F. to about 300° F. for a period of from about 20 minutes to about 120 minutes, and removing by-product acetic acid and residual anhydride.

4,418,102

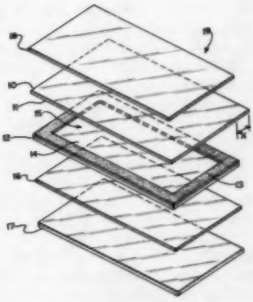
LIQUID CRYSTAL DISPLAYS HAVING IMPROVED HERMETIC SEAL

Joseph P. Ferrato, Stow, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed May 14, 1981, Ser. No. 263,791

Int. Cl.³ G02F 1/13

U.S. Cl. 428—1 13 Claims

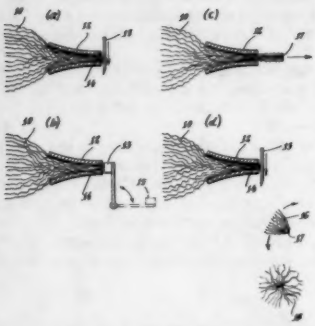


1. A hermetically sealed liquid crystal display comprising a liquid crystal layer enclosed between a pair of parallel plates of which at least one plate is transparent, said plates chemically bonded together by means of an electrically insulative sealant material disposed between the plates and surrounding the liquid crystal layer, said display having improved resistance to vapor penetration provided by said sealant material being a crosslinked thermoset product of an initially uncrosslinked composition comprising a mixture of at least one phenoxy resin and at least one epoxy resin in conjunction with a crosslinking agent, said composition adapted to be sufficiently flowable before crosslinking to enable the composition to be disposed as said sealant material between said plates, and said composition containing an amount of said crosslinking agent sufficient to insure that said composition is sufficiently crosslinked to provide said sealant material with improved resistance to vapor penetration after said composition has been disposed as said sealant material between the plates.

4,418,103
FILLING MATERIAL AND PROCESS FOR MANUFACTURING SAME

Masami Tani, Kurashiki; Tamemaru Esaki, Takatsuki, and Yoshikata Okno, Asaguchi, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Mar. 8, 1982, Ser. No. 355,859
Claims priority, application Japan, Jun. 8, 1981, 56-88559
Int. Cl.[3] D02G 1/00; D04D 7/06
U.S. Cl. 428—4 11 Claims



1. Filling material comprising a multiplicity of crimped fibers joined together at one end which spread spherically or radially about said one end, said fibers having a fineness of 0.05 to 30 denier, a crimping rate of at least 5%, and a maximum length of 50 mm, said fibers having 3 to 25 crimps per inch, said crimps being located in mutually deviating phases, and said fibers having a density of 30,000 to 1,500,000 denier/cm^2 at said end thereof.

5. A continuous process for manufacturing filling material, said process comprising the steps of:

opening a tow of crimped fibers at a rate of at least 30%, said fibers having a fineness of 0.05 to 30 denier, a crimping rate of at least 5%, and from 3 to 25 crimps per inch;

compressing at least one end of said opened tow until said tow has a fiber density of 30,000 to 1,500,000 denier/cm^2 at said end thereof;

cutting said tow at said end thereof to expose a tow end surface;

joining said fibers together at said tow end surface while said tow is maintained in its compressed position;

cutting away a tow length of no more than about 50 mm from said end surface while said tow is maintained in its compressed position, whereupon said tow length is released from compression, and spreads spherically or radially about said end surface to form a spherically or radially spread fiber product; and

repeating the foregoing sequence of steps to form a multiplicity of spherically or radially spread fiber products.

4,418,104
FUR-LIKE NAPPED FABRIC AND PROCESS FOR MANUFACTURING SAME

Yoshiteru Kiyomura, Shiga; Yutaka Masuda, Otsu, and Tatsuji Kojima, Uji, all of Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Continuation of Ser. No. 199,545, Oct. 22, 1980, abandoned.
This application May 27, 1982, Ser. No. 382,569
Claims priority, application Japan, Oct. 25, 1979, 54-138146
Int. Cl.[3] B32B 5/06, 7/08; D04H 11/00
U.S. Cl. 428—15 9 Claims

1. In a fur-like fabric of the type having a base cloth and a multiplicity of napped fibers extending from said base cloth the improvement wherein:

(a) said napped fibers comprise sharpened tip portions disposed at at least one endwise fiber portion thereof;

(b) said napped fibers being implanted in said base fabric by needle punching and raised from said points of implantation;

(c) said points of implantation are not interconnected by said napped fibers;

(d) said napped fibers are non-uniform in length;

(e) said napped fibers are substantially uncrimped;

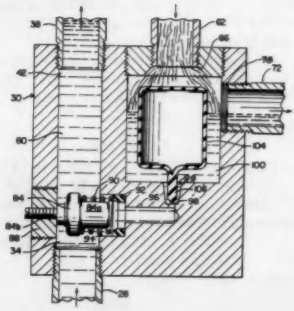
(f) said napped fibers are parallel with substantially no intertwining therebetween; and

(g) said napped fibers have a static frictional coefficient of less than 0.35.

4,418,105
DOUBLE-COATED TAPE CONSTRUCTION HAVING AN IDENTIFIABLE EXTENDED LINER

James A. Stratton, Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation of Ser. No. 124,212, Feb. 25, 1980, abandoned.
This application Sep. 21, 1981, Ser. No. 303,952
Int. Cl.[3] B32B 3/02
U.S. Cl. 428—40 3 Claims



1. An adhesive tape assembly including a backing having a pressure sensitive adhesive coating covering its top and its bottom surfaces and a release liner covering one of said adhesive coatings, wherein one edge of said release liner is co-linear with said backing along one edge of said backing, and the opposing edge of said release liner extends laterally beyond the other edge of said backing so as to afford a tab portion for removing said release liner from said backing, and wherein said extended edge of said release liner has a different outer profile than said co-linear edge, with said outer profile of said extended edge being wave-shaped so as to afford its easy identification and location.

4,418,106

METHOD OF PRODUCING A FLOCKED COMPOSITE BODY

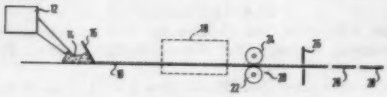
Josef Landler, Wolfratshausen, and Max Mayr, Hart, both of Fed. Rep. of Germany, assignors to Alkor GmbH Kunstoffverkauf, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 127,856, Mar. 6, 1980, abandoned. This application Apr. 12, 1983, Ser. No. 483,418

Claims priority, application Fed. Rep. of Germany, Mar. 15, 1979, 2910234; Jul. 24, 1979, 2930007

Int. Cl.³ B32B 3/26

U.S. Cl. 428—89 32 Claims



1. A method for producing a flocked web comprising:

(a) applying a layer of a spreadable thermosetting plastic material in the form of a foam onto a porous sheet carrier, the viscosity of said spreadable material and the porosity of the sheet carrier being such that the spreadable material penetrates only into the upper portion of the porous sheet carrier and does not penetrate completely through the carrier;

(b) applying flocked fibers onto the thermosetting plastic material layer;

(c) partially crosslinking the thermosetting plastic layer to fix the flocked fibers in the thermosetting plastic material layer;

(d) pressing the composite composed of the carrier sheet, partially crosslinked plastic material layer and flock between embossing tools, particularly embossing rollers, said embossing tools being heated so as to continue the crosslinking of the plastic material layer, wherein at least one of the embossing tools adjacent the flocked layer has an embossing design therein so as to provide a corresponding embossed pattern on the flocked layer;

(e) connecting the side of the porous sheet carrier to a backing which increases the stiffness of the carrier, said backing being a polyolefin/wood-dust panel, said connecting being effected in a press having opposite pressing tools, said back panel being introduced in the hot state together with the sheet carrier carrying said flocked layer of plastic material foam between said pressing tools such as to effect connection of said porous sheet carrier and said panel under pressure exerted by said pressing tools through the thermoplastified polyolefin of the back panel.

4,418,107

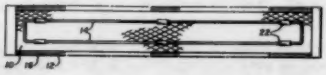
COVER FOR CARBON BAKE PIT

Richard J. Yost, Medford Lakes, N.J., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed May 20, 1982, Ser. No. 380,199

Int. Cl.³ F27D 1/18; B32B 3/24

U.S. Cl. 428—138 3 Claims



1. A flexible insulated rectangular cover comprising:

(a) an expanded metal backing having the generally flexible direction of said expanded metal running in the direction of the long dimension of said rectangular cover and the generally rigid direction running in the short direction of said rectangular cover;

(b) a flexible layer of ceramic fiber insulation adjacent one surface of said expanded metal backing;

(c) first attaching means attaching said layer of ceramic fiber insulation to said expanded metal backing, said first attaching means adapted to permit said expanded metal backing and said attached layer of ceramic fiber insulation to flex in the said flexible direction;

(d) a generally rigid elongated handle means extending in the direction of the long dimension of said rectangular cover and substantially the length thereof; and

(e) second attaching means attaching said handle means to the other surface of said expanded metal backing, said second attaching means adapted to permit flexing of said expanded metal backing and said ceramic fiber insulation in said flexible long dimension independent of said generally rigid elongated handle means.

4,418,108

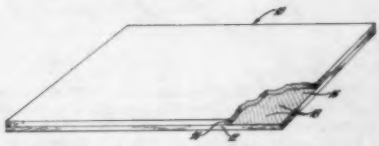
COMPOSITE ROOFING PANEL

David C. K. Lin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Feb. 8, 1982, Ser. No. 346,696

Int. Cl.³ B32B 3/10, 5/20

U.S. Cl. 428—139 6 Claims



1. A composite panel for roof insulation, said panel comprising a fibrous glass board susceptible to penetration of foamable liquid thereinto when foamable liquid is placed on an upper surface thereof, a generally uniformly perforated sheet on the upper surface of the board for limiting penetration of foamable liquid thereinto during manufacture of the panel while allowing bonding of foam thereto at the perforations, and a layer of plastic foam foamed and cured in place from foamable liquid placed on top of the perforated sheet, the perforated sheet having at least two generally circular holes per square inch, the diameter of the holes of the perforated sheet being 0.46 of an inch or less, and the amount of open area represented by the holes being less than 1.5 percent of the total area of the sheet.

4,418,109

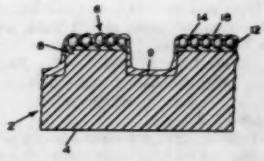
DURABLE, LOW-MAINTENANCE FLOORING TILE

Jesse D. Miller, Jr., Lancaster; James A. Tshudy, Ephrata, and Ralph E. Unruh, Denver, all of Pa., assignors to Armstrong World Industries, Inc., Lancaster, Pa.

Filed Mar. 29, 1982, Ser. No. 362,645

Int. Cl.³ B32B 3/00, 5/16

U.S. Cl. 428—142 3 Claims



1. A decorative plastic floor covering in tile form compris-

ing a decorative plastic base having raised and depressed areas, and a plurality of elements positioned on the raised areas only, a cured clear or translucent wear layer overlying both the elements and the plastic base, said elements comprising particles embedded in a cured plastic matrix positioned only on the surface of the raised areas of the base, said particles being distributed on the plastic matrix in a substantially abutting relationship with a single layer structure of particles, those particles protruding above the matrix, but being below the uppermost level of the wear layer, the particles are rounded inorganic particles and have a Moh hardness greater than 4, and a particle size distribution such that none of the particles are greater than about 595 microns, and about 55% of the particles are between about 149 and 296 microns.

4,418,110

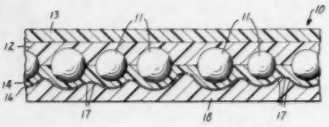
VAPOR-PERMEABLE RETROREFLECTIVE SHEETING

David C. May, Stillwater, and Terry R. Bailey, Woodbury, both of Minn., assignors to Minnesota Mining and Manufacturing, St. Paul, Minn.

Filed Jun. 21, 1982, Ser. No. 390,636

Int. Cl.³ G09F *13/16, 13/06*

U.S. Cl. 428—143 **17 Claims**



1. Retroreflective sheeting comprising a monolayer of transparent microspheres, a metallic specularly reflective layer underlying and in optical connection with the microspheres, and a transparent polymeric layer in which the microspheres are supported; the specularly reflective layer having an extensive array of minute discontinuities sufficient for the sheeting to transmit water vapor through the sheeting at a rate of at least 15 grams/square meter/24 hours.

4,418,111

NON-SKID SURFACE COMPOSITIONS FOR PAPER PRODUCTS

Ronald Carstens, Anacortes, Wash., assignor to Key Tech Corporation, Redmond, Wash.

Continuation-in-part of Ser. No. 252,035, Apr. 8, 1981, abandoned. This application Aug. 9, 1982, Ser. No. 406,340

Int. Cl.³ B32B *5/16, 29/04*

U.S. Cl. 428—145 **23 Claims**

1. An article comprising a paper substrate formed at least in part from recycled fiber having adhered to at least one surface thereof an anti-skid effective amount of a composition resulting from an aqueous solution comprising colloidal silica having a pH greater than 7 to approximately 11 and a mean particle size in the range of 10 to 150 millimicrons, and a clathrating agent selected from the group consisting of urea and thiourea.

4,418,112

COMPOSITE FILM AND UTILIZATION THEREOF

Takashi Toyoda; Yozo Ohba, and Masaaki Yamanaka, all of Hasaki, Japan, assignors to Oji Yuka Goseishi Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,976

Claims priority, application Japan, Sep. 16, 1980, 55-128350

Int. Cl.³ B32B *7/02, 5/16*

U.S. Cl. 428—212 **3 Claims**

1. A composite film for a diazo copying paper comprising a biaxially oriented backing layer comprising a polyolefin resin containing finely divided calcium carbonate dispersed therein in a quantity of from 0 to 45 parts by weight per 100 parts by weight of the resin, an interlayer comprising a polyolefin resin containing finely divided calcium carbonate dispersed therein in a quantity of from 10 to 200 parts by weight of the resin, which interlayer is bonded to at least one surface of the backing layer, and a uniaxially oriented surface layer comprising a polyolefin resin containing a finely divided acidic filler dispersed therein in a quantity of from 20 to 300 parts by weight per 100 parts by weight of the resin, which surface layer is bonded to the surface of the interlayer and has a thickness of from 3 to 15 microns and has fine surface cracks and which surface layer is to receive thereon a photosensitive diazo layer.

4,418,113

REINFORCING MAT FOR FIBER REINFORCED PLASTIC MATERIAL

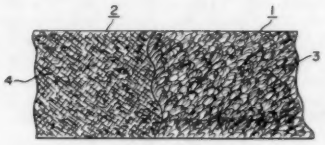
Sadao Kawashima, and Chiharu Ito, both of Sohwa, Japan, assignors to Asahi Fiber Glass Company Limited, Tokyo, Japan

Continuation of Ser. No. 239,648, Mar. 2, 1981, abandoned. This application Aug. 2, 1982, Ser. No. 404,419

Claims priority, application Japan, Mar. 21, 1980, 55-35804[U]

Int. Cl.³ B32B *17/02, 17/04, 17/12*

U.S. Cl. 428—213 **18 Claims**



1. A reinforcing mat for fiber reinforced plastic material to be manufactured by the hand-layup process, which consists essentially of:

a first layer of curled glass fiber strands arranged in a non-directional manner in the layer, each strand being formed of a collection of at least 300 glass filaments and each having a length of more than 60 cm and the density of said first layer being in a range of from 400 g/m^2 to 1500 g/m^2;

a second layer, thinner than said first layer, of glass fiber strands arranged in a non-directional manner on said first layer, the length of the strands being in a range of from 2 cm to 15 cm and the density of said second layer being in a range of from 50 g/m^2 to 500 g/m^2; and

a polyester binder for bonding said first and said second layers.

4,418,114

COEXTRUDED THERMOPLASTIC STRETCH-WRAP

William F. Briggs, Chelmsford, Mass., and Edward M. Bullard, Rochester, N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 373,079, Apr. 29, 1982, which is a continuation of Ser. No. 187,678, Sep. 16, 1980, abandoned, which is a continuation-in-part of Ser. No. 942,715, Sep. 15, 1978, abandoned. This application Aug. 11, 1982, Ser. No. 407,205

Int. Cl.³ B32B *7/02, 27/08, 27/32;* B65B *53/00*

U.S. Cl. 428—218 **5 Claims**

1. A unitized plurality of goods comprising:

a plurality of goods having a polyethylene stretch wrap film layed on about the girth of said goods in stretched condition, the end region of said film being attached to a previous layer of said film;

said polyethylene stretch wrap film comprising a coextruded three-layer thermoplastic film having a core layer comprising a linear low-density polyethylene, said linear low-

density polyethylene consisting essentially of ethylene copolymerized with a minor amount of at least one alpha-olefin having 4 to 10 carbon atoms and exterior skin layers comprising highly branched low density polyethylene.

4,418,115

FRICTION LINING

Michel Le Lannou, Ermont, France, assignor to Valeo S.A., Paris, France

Filed Aug. 25, 1981, Ser. No. 296,231
Claims priority, application France, Sep. 4, 1980, 80 19087
Int. Cl.³ F16D 69/02
U.S. Cl. 428—283 5 Claims

1. A friction lining containing mineral fibers, organic fibers, fillers and a binder, wherein said organic fibers are all of the initially fusible type but cross-linkable to form a protective crust under the heating conditions of service.

4,418,116

COPOLYESTER BINDER FILAMENTS AND FIBERS

Paul T. Scott, Kinston, N.C., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Nov. 3, 1981, Ser. No. 317,874
Int. Cl.³ D02G 3/04, 3/34; D04H 1/04, 3/14
U.S. Cl. 428—288 8 Claims

1. A copolyester binder filament wherein the copolyester consists essentially of a terephthalate of ethylene and diethylene glycols and the mol percent of diethylene glycol based on the mols of terephthalate is within the range of 25 to 35%, with the binder filaments having a crystallinity based on fiber density of less than 25%, and the copolyester having a crystalline half-time at 150° C. of greater than 2 minutes.

6. A blend of filaments suitable for making a heat-bonded filament structure consisting essentially of filaments of poly-(ethylene terephthalate) and from 5 to 35% by weight of binder filaments of a copolyester which consists essentially of a terephthalate of ethylene and diethylene glycols in which copolyester the mol percent of diethylene glycol based on mols of terephthalate is within the range of 25 to 35%, with the binder filaments having a crystallinity based on fiber density of less than 25%, and the copolyester having a crystalline half-time at 150° C. of greater than two minutes.

4,418,117

CONDUCTIVE BARRIER COAT FOR ELECTROSTATIC MASTERS

Michael J. Shaw, Paw Paw, Mich., assignor to Allied Paper Incorporated, Kalamazoo, Mich.

Division of Ser. No. 235,602, Feb. 18, 1981, Pat. No. 4,379,822.
This application Dec. 21, 1982, Ser. No. 451,784
Int. Cl.³ B32B 5/16; G03G 5/14
U.S. Cl. 428—327 3 Claims

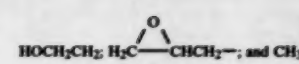
1. In a substrate suitable for the preparation of printing masters comprising a base and a water resistant barrier coat applied to said base, the masters having a photoconductive layer comprising a photoconductive material and a binder applied to said barrier coat; the improvement wherein said barrier coat comprises, on a dry weight basis;

(a) a film-forming amount of about 50–95% of an ethylene acrylic acid copolymer;

(b) a conductive amount of about 5–15%, sufficient to obtain a resistivity less than about 10^{11} ohms per square, of a quaternary ammonium salt having the formula;

$$[R_A{}^1\text{—N—}R^{II}{}_{(4-A)}^{\oplus}]X^{\ominus}$$

wherein R^1 is a radical selected from the group consisting of



R^{II} is lower alkyl having from one to three carbon atoms;

A is 1, 2, or 3; and

X is an anion selected from the group consisting of chloride, fluoride, bromide, sulfate, phosphate or acetate; and

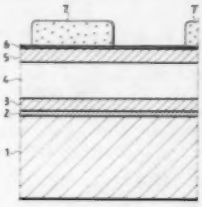
(c) filler, a proportion of which is plastic particles, present in the amount of about 0–100% based on the dry weight of copolymer, said barrier coat being substantially free of materials which affect water resistance.

4,418,118

ELECTROLUMINESCENCE STRUCTURE

Sven G. Lindors, Espoo, Finland, assignor to Oy Lohja Ab, Virkkala, Finland

Filed Apr. 8, 1982, Ser. No. 366,573
Claims priority, application Finland, Apr. 22, 1981, 811244
Int. Cl.³ H05B 33/14; B32B 17/06
U.S. Cl. 428—336 8 Claims



1. An electroluminescence structure including a substrate member, acid structure further comprising: a first electrode layer disposed on the substrate; a second electrode layer forming a thick film comprising a binder and conductive particles; and a luminescence layer and at least first and second additional layers disposed between the first and the second electrode layers; wherein said first additional layer is disposed between a said electrode layer and the luminescence layer and has at least one of the functions of current limitation and chemical protection; and wherein said second additional layer is formed of resistive material having a thickness of the order of about 10–100 nm, is disposed between the second electrode layer and the luminescence layer, and is bounded by the second electrode layer so as to form a spreading resistance for the point contacts formed by the conductive particles in the second electrode layer for homogenizing inhomogeneous current densities before the currents reach the luminescence layer.

4,418,119

OVENABLE BOARD

George W. Morrow, and Phillip R. Lambert, Cullman, both of Ala., assignors to Daubert Industries, Inc., Oak Brook, Ill.

Filed Nov. 18, 1981, Ser. No. 322,437
Int. Cl.³ B32B 9/04; B05D 3/02
U.S. Cl. 428—342 2 Claims

1. An ovenable board for packaging of pizza comprising a paperboard substrate material having two discrete coatings palced thereon, the first coating comprising at least one addition to the surface of said substrate of a coating of polyvinyl alcohol, said polyvinyl alcohol being present on the paper substrate material in an amount in the range of from about 3 to about 12 pounds per ream of said paperboard substrate and a second coating comprising a layer of a silicone release coating being placed on the exposed surface of said first coating of polyvinyl alcohol, said second coating being present on the surface of said first coating comprising polyvinyl alcohol in an

amount in the range of from about 0.7 to about 0.9 pounds per ream of said paperboard substrate and being inert to and not absorbed by the components of said pizza which are in contact with said second coating, that their integrity is unaffected at temperatures ranging from about 0° F. to about 350° F.

4,418,120

TACKIFIED CROSSLINKED ACRYLIC ADHESIVES

Joanne P. Kealy, Maplewood, Minn., and Robert E. Zenk, River Falls, Wis., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Jul. 19, 1982, Ser. No. 399,350

Int. Cl.³ C09J 7/02; B05D 1/36

U.S. Cl. 428—343 **7 Claims**

1. Normally tacky and pressure-sensitive adhesive tape comprising a sheet material having, on at least one surface, a thin layer of normally tacky and pressure-sensitive adhesive containing trace amounts of solvent and consisting essentially of an at least substantially surfactant-free blend of (a) a crosslinked pressure-sensitive copolymer of 100 parts by weight of monomers consisting essentially of iso-octyl acrylate and 3–7 parts by weight of acrylic acid, said copolymer, prior to crosslinking being soft, tacky, and having an inherent viscosity on the order of 0.75–1.5 dl/g, (b) a small amount of an antioxidant that is based on either a hindered phenol or a sulfur-containing organo-metal salt, and (c) a tackifying rosin ester, said adhesive having the properties of (1) a rolling ball tack value of less than 6 cm, (2) an ability to bond firmly to stain¹ess steel, ABS terpolymer, low density polyethylene, and isotactic polypropylene, and (3) a shear value of at least 5,000 minutes at 70° C.

4,418,121

TILE FOR CONSTRUCTION REPRESENTING ANTIQUE PATTERN

Kaneaki Moriyama, 24-2 Mukocho 1-chome, Amagasaki-shi, Hyogo, 661, Japan

PCT No. PCT/JP79/00163, § 371 Date Feb. 23, 1981, § 102(e) Date Jul. 10, 1980, PCT Pub. No. WO81/00015, PCT Pub. Date Jan. 8, 1981

PCT Filed Jun. 23, 1979, Ser. No. 227,096

Int. Cl.³ C04B 41/02; E04F 13/14

U.S. Cl. 428—409 **4 Claims**

1. A method of producing construction tiles having an antique color appearance comprising the steps of:

(1) removing refractory bricks used to line a high temperature furnace fueled by oil or coke and exposed to the highest temperature in said furnace, the removed refractory bricks having an antique color appearance on the exposed surfaces thereof and ordinarily discarded as waste; and

(2) cutting the removed refractory bricks to produce tiles having antique colored surfaces.

4,418,122

ELECTRICAL CONDUCTOR WITH POLYESTER INSULATING LAYER AND METHOD THEREFOR

Werner Rieder, Vienna, and Martin Fehrle, Bietigheim-Bissingen, both of Austria, assignors to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft, Wiener Neudorf, Austria

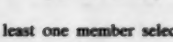
Division of Ser. No. 375,205, May 5, 1982, Pat. No. 4,388,454. This application Mar. 2, 1983, Ser. No. 471,266

Claims priority, application European Pat. Off., May 7, 1981, 81-890076.3; Austria, Dec. 9, 1981, 5278/81

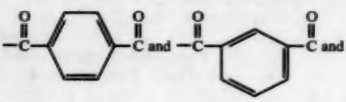
Int. Cl.³ B32B 15/08; C08G 63/16; B05D 5/12

U.S. Cl. 428—480 **14 Claims**

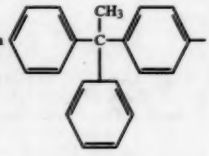
1. An electrical conductor provided with an electrically insulating layer of an organic, high-molecular weight polyester containing substantially chain members of the formula



wherein X is at least one member selected from the group consisting of

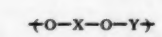


Y has the formula

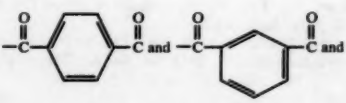


having an inherent viscosity of at least 1.0 dl/g measured at 30° C. in a solution of 0.5 g of the polyester in 100 ml of a mixture of 60% by weight of phenol and 40% by weight of 1,1,2,2-tetrachlóroethane and whose films cast from a chlorinated organic solution have an elongation at break of more than about 20%.

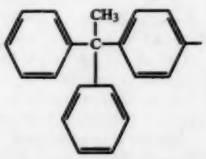
8. A method of insulating an electrical conductor comprising providing the exterior surface of the electrical conductor with an electrically insulating layer of an organic, high-molecular weight polyester containing substantially chain members of the formula



wherein X is at least one member selected from the group consisting of



Y has the formula



having an inherent viscosity of at least 1.0 dl/g measured at 30° C. in a solution of 0.5 g of the polyester in 100 ml of a mixture of 60% by weight of phenol and 40% by weight of 1,1,2,2-tetrachloroethane and whose films cast from a chlorinated organic solution have an elongation at break of more than about 20%.

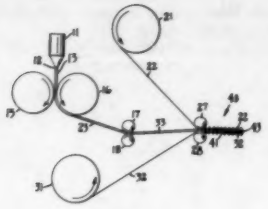
4,418,123
EXTRUDABLE SELF-ADHERING ELASTIC AND METHOD OF EMPLOYING SAME

William L. Bunnelle, Stillwater, and Richard C. Lindmark, Coon Rapids, both of Minn., assignors to H. B. Fuller Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 141,959, Apr. 21, 1980, abandoned, which is a division of Ser. No. 36,858, May 7, 1979, Pat. No. 4,259,220, which is a continuation-in-part of Ser. No. 944,845, Sep. 22, 1978, abandoned, and a continuation-in-part of Ser. No. 966,794, Dec. 6, 1978, abandoned. This application Dec. 3, 1981, Ser. No. 326,949

Int. Cl.³ B32B *27/08, 31/08*

U.S. Cl. 428—517 21 Claims



1. A method for imparting elastic properties to a flexible substrate, which comprises contacting a surface of the flexible substrate with a band of a self-adhering elastic composition which consists essentially of:

(a) a block copolymer comprising at least one substantially amorphous, rubbery polymeric midblock and at least was glassy poly(vinylarene) end blocks;

(b) about 20 to 150 parts by weight of a midblock associating resin; and

(c) about 10 to 50 parts by weight of an endlock associating resin having a glass transition temperature and a softening point above about 115° C. each per 100 parts of the block copolymer;

wherein the proportions of components (a), (b), and (c) are selected to provide the following properties:

(i) a tensile strength at 500% elongation, determined at 20°–25° C., of at least 50 pounds per square inch;

(ii) a 180° peel resistance, according to PSTC-1, determined at 20°–25° C. 24 hours after formation of the pressure-sensitive adhesive bond, of at least about 450 grams per 25.4 mm-width;

(iii) a dead load deformation, tested at 37.8° C. and 1500 g/cm², less than 50%; and

(iv) a loss modulus of 5×10^4 to 100×10^4 dynes/cm², a storage modulus of 65×10^4 to 225×10^4 dynes/cm², and a loss tangent of 0.03 to 1.0, at 0.01–0.25 Hz at 25°–50° C.

13. The method for imparting a self-adhering elastic to a flexible substrate comprising the steps of:

(a) unreeling a band of self-adhering elastic composition from a roll, said roll being maintained at a temperature below the softening point of said self-adhering elastic and said band of self-adhering elastic being an extrudate at least 50 microns in thickness which consists essentially of a block copolymer comprising at least one substantially amorphous, rubbery polymeric midblock and at least two glassy poly(vinylarene) end blocks; (ii) 20–150 parts per hundred of a midblock associating resin; and (iii) 10–150 parts per hundred of an aromatic, essentially hydrocarbon endblock associating resin having a Tg and a softening point above 115° C. each per one hundred parts of the block copolymer; wherein the proportions (i), (ii), and (iii) are selected to provide the following properties:

(i) a tensile strength at 500% elongation, determined at 20°–25° C., of at least 50 pounds per square inch;

(ii) a 180° peel resistance, according to PSTC-1, determined at 20°–25° C. 24 hours after formation of the pressure-sensitive adhesive bond, of at least about 450 grams per 25.4 mm-width;

(iii) a dead load deformation, tested at 37.8° C. and 1500 g/cm², less than 50%; and

(iv) a loss modulus of 5×10^4 to 100×10^4 dynes/cm², a storage modulus of 65×10^4 to 225×10^4 dynes/cm², and a loss tangent of 0.03 to 1.0, at 0.01–0.25 Hz at 25°–50° C.

(b) contacting the band of self-adhering elastic with a surface of a flexible substrate forming a bond between the substrate and elastic.

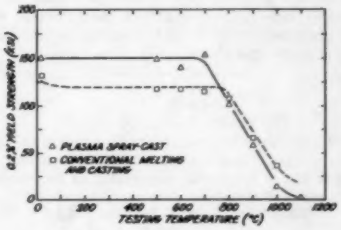
4,418,124
PLASMA SPRAY-CAST COMPONENTS

Melvin R. Jackson, and John R. Rairden, III, both of Schenectady, N.Y., assignors to General Electric Company, Cincinnati, Ohio

Continuation of Ser. No. 194,084, Oct. 6, 1980. This application Aug. 14, 1981, Ser. No. 292,857

Int. Cl.³ B05D *1/10*

U.S. Cl. 428—548 22 Claims



1. An article of manufacture formed by the low pressure/-high velocity plasma spray-casting of a superalloy selected from the group consisting of nickel-base superalloy, cobalt-base superalloy and iron-base superalloy, said article in the as-plasma-spray-cast condition having a density greater than about 97% of theoretical, the superalloy of said article having in the as-plasma-spray-cast condition a grain size in the range of from about 0.2 micron to about 0.5 micron, less than about 1,000 parts per million oxygen and a chemically homogeneous microstructure substantially free from microsegregation.

4,418,125
MULTI-LAYER MULTI-METAL ELECTROPLATED PROTECTIVE COATING

John A. Henricks, 742 N. Oak Park Ave., Oak Park, Ill. 60302

Filed Dec. 6, 1982, Ser. No. 432,562

Int. Cl.³ C25D *5/14;* B32B *15/01, 15/18*

U.S. Cl. 428—639 2 Claims

1. A method of electroplating a composite protective coating for steel which comprises electroplating on said steel an initial layer of about 0.00015" of sulfur free nickel, followed by about 0.00015" of sulfur containing bright nickel and followed in sucession by about 0.0002" of cadmium and by about 0.0002" of copper which is then coated with a second layer of about 0.00015" of sulfur free nickel and a second layer of about 0.00015" of sulfur containing bright nickel, after which the bright nickel is electroplated with about 0.00001" of microporous chromium.

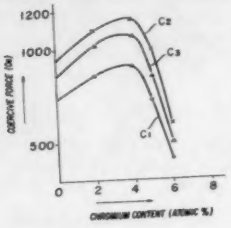
2. A steel article coated with the composite multi-layer multi-metal coating of claim 1.

4,418,126

MAGNETIC RECORDING MEDIUM

Toshiaki Izumi; Yasuta Taketomi, and Takayoshi Kobake, all of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Jul. 15, 1981, Ser. No. 283,548
Claims priority, application Japan, Jul. 28, 1980, 55-103405
Int. Cl.³ G11B *5/70*
U.S. Cl. 428—694 **2 Claims**



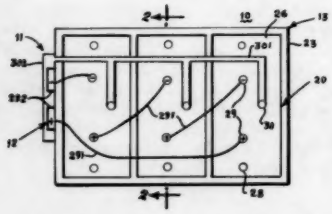
1. A magnetic recording medium which comprises a thin metallic magnetic layer on a non-magnetic substrate wherein said thin metallic magnetic layer is made of cobalt, nickel and chromium having a ratio of cobalt to nickel in a range of 9:1 to 7:3 and chromium content of up to 5 atomic percent based on the total of cobalt and nickel.

4,418,127

BATTERY CELL MODULE

John S. Shambaugh, Holliston; Robert G. Yetman, Carlisle, and Hyman Zeltzer, Needham, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Nov. 23, 1981, Ser. No. 324,348
Int. Cl.³ H01M *14/00*
U.S. Cl. 429—8 **5 Claims**



1. A battery cell module for use with high energy lithium sources comprising:

a plurality of battery cells, each of said battery cells having a cell casing made of metal and shaped as a rectangular compartment, a vent valve fitting attached to the top of said cell casing, a pair of cell electrical terminals attached to the top of said cell casing, and fill ports in the top of said cell casing;

means for containing said plurality of battery cells, said containing means including a metal modular casing shaped as a rectangular compartment having an open top, a plastic top cover for fixedly mounting in said open top of said modular casing, spacers for aligning and electrically insulating said battery cells mounted in said containing means, and foam for potting said plurality of battery cells in said modular casing, said foam filling voids between said modular casing and said cell casing and being bonded to said modular casing, said top cover, and each of said cell casing to form a composite wall being a unitized structure capable of withstanding high internal pressure from within said battery cells;

means for electrically connecting said plurality of battery cells, said electrically connecting means connected to said cell electrical terminals, said cell electrical terminals extending through said top cover of said modular casing whereon said electrically connecting means makes contact; and

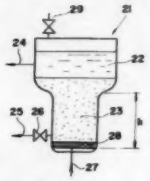
chemical scrubbing means attached to the external surface of said modular casing, said scrubbing means operably connected to said vent valve fitting of each of said battery cells extending through said top cover.

4,418,128

METAL-BROMINE SECONDARY BATTERY

Toshinobu Fujii, Hino, Japan, assignor to Meidensha Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1982, Ser. No. 361,817
Int. Cl.³ H01M *2/40*
U.S. Cl. 429—70 **3 Claims**



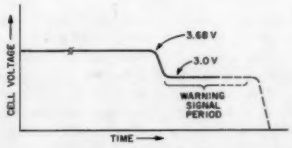
1. In an electrolyte circulation type secondary battery in which the positively active material is bromine and the negatively active material is a metal selected from the group consisting of cadmium, zinc and lead, wherein the improvement in the metal-bromine secondary battery comprises an anode electrolyte storage tank having a complexing agent storage tank having a smaller cross-sectional area contained in the lower portion therein, wherein recycled electrolyte is introduced in the anode electrolyte storage tank by first passing the electrolyte through a complexing agent stored in the lower portion therein.

4,418,129

ELECTROCHEMICAL CELL

Franz Goebel, Sudbury, Mass., assignor to GTE Products Corporation, Stamford, Conn.

Filed Mar. 3, 1982, Ser. No. 354,275
Int. Cl.³ H01M *6/14*
U.S. Cl. 429—91 **8 Claims**



1. A button-type electrochemical cell comprising:

a generally-flat housing enclosing a volume;

an electrochemical system within the housing and including an electrolytic solution and a generally-flat battery stack exposed to said electrolytic solution, said battery stack comprising:

a pair of spaced-apart carbon cathode elements each in the form of a flat disc; and

a generally-flat anode structure between the pair of carbon cathode elements and comprising:

a first, flat, active element of a first material having a first oxidation potential within the cell, said first active element being consumed by electrochemical action within the cell during discharge of the cell and establishing a first value of operating voltage for the cell during discharge of the cell and the consumption of the first active element; and

a second, flat, active element of a second material having a second oxidation potential within the cell, said second active element being consumed by electrochemical action within the cell during discharge of the cell and establishing a second, different value of operating potential for the cell during discharge of the cell and consumption of the second active element;

said first and second active elements being arranged with respect to each other so that one of the active elements is consumed before the other whereby the value of operating voltage of the cell changes from one of its two values to the other of its two values;

wherein:

the electrolytic solution includes a catalytically-reducible soluble cathode;

the carbon cathode elements are porous carbon structures operative during discharge of the cell to catalytically reduce the soluble cathode of the electrolytic solution; and

the first active element is of a material having a greater oxidation potential within the cell than that of the second active element and covers the second active element.

4,418,130

ADDITIVE FOR ZINC ELECTRODES

Daniel G. Soltis, Broadview Heights; Dean W. Sheibley, Sandusky, and William J. Nagle, Sheffield Lake, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jun. 10, 1981, Ser. No. 272,406

Int. Cl.³ H01M *6/04, 4/42*

U.S. Cl. 429—206 **4 Claims**

3. An alkaline cell having a positive electrode of a metal selected from the group consisting of silver and nickel and a negative zinc electrode containing from about 5% up to about 10% by weight of $Ba(OH)_2.8H_2O$.

4,418,131

PHOTOGRAPHIC PRODUCTS AND PROCESSES EMPLOYING NOVEL NONDIFFUSIBLE YELLOW DYE-RELEASING COMPOUNDS AND PRECURSORS THEREOF

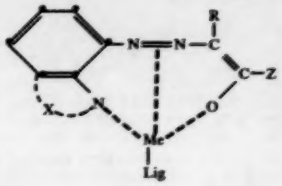
Steven Evans, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 392,509, Jun. 28, 1982. This application Apr. 14, 1983, Ser. No. 484,801

Int. Cl.³ G03C *1/40, 1/10, 1/84;* C09B *45/00*

U.S. Cl. 430—17 **7 Claims**

1. A photographic element comprising a support having thereon a layer comprising a photographic mordant having bound thereto a coordination complex having the formula:



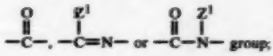
wherein:

(a) X represents the atoms necessary to complete a 5- or 6-membered aromatic heterocyclic fused ring;

(b) Z represents alkyl, substituted alkyl, aryl or substituted aryl;

(c) R represents CN or J-L;

(d) J represents a bivalent



(e) L represents alkyl, substituted alkyl, aryl, substituted aryl, or can be taken together with Z to complete a carbonyl-containing 5- or 6-membered heterocyclic or carbocyclic ring;

(f) Z^1 represents the same groups as Z;

(g) Lig is a monoanionic tridentate ligand; and

(h) Me is a polyvalent, hexacoordinate metal ion.

4,418,132

MEMBER FOR ELECTROSTATIC PHOTOCOPYING WITH $SI_3N_{4-X}(0<X<4)$

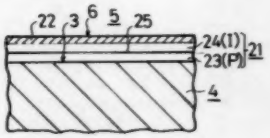
Shunpei Yamazaki, 21-21 Kitakarasuyama 7-chome, Setagaya-ku, Tokyo, Japan

Filed Jun. 23, 1981, Ser. No. 276,503

Claims priority, application Japan, Jun. 25, 1980, 55-86801

Int. Cl.³ G03G *5/082, 5/14*

U.S. Cl. 430—57 **5 Claims**



1. A printing member for electrostatic photocopying comprising:

a substrate having a conductive surface; and a photoelectrically-sensitive, electrically chargeable layer on the conductive surface of the substrate;

wherein the photoelectrically-sensitive, electrically chargeable layer has a non-single-crystalline semiconductor layer on the conductive surface of the substrate and an insulating or semi-insulating layer formed on the non-single-crystalline semiconductor layer;

wherein the non-single-crystalline semiconductor layer is formed principally of $Si_3N_{4-x}(0<x<4)$ and has a first layer on the side of the substrate and a second layer on the first layer to create a transition region;

wherein the first layer is P or N type, the second layer is I type, and the transition region is PI or NI type depending on whether the first layer is P or N type;

wherein the energy band gap of the first layer is equal to or less than the energy band gap of the second layer which in

turn is much less than the energy band gap of the insulating or semi-insulating layer.

4,418,133

DISAZO PHOTOCONDUCTIVE MATERIAL AND ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER HAVING DISAZO PIGMENT LAYER

Kazuharu Katagiri, Mitaka; Shoji Umehara, Fuchu; Katsunori Watanabe, Yamato, and Shozo Ishikawa, Sayama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

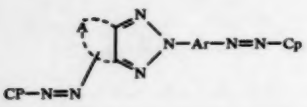
Filed Mar. 4, 1982, Ser. No. 354,899

Claims priority, application Japan, Mar. 27, 1981, 56-44066; Jul. 17, 1981, 56-112658; Jul. 17, 1981, 56-112659

Int. Cl.³ G03G 5/06

U.S. Cl. 430—58 **26 Claims**

1. An organic photoconductive material represented by the formula



(I)

wherein A is an atomic group necessary for completing a substituted or unsubstituted aromatic hydrocarbon ring, Ar is a substituted or unsubstituted arylene group, and Cp is a coupler residue.

4,418,134

AQUEOUS COMPOSITION-SENSITIVE PHOTOCONDUCTIVE COMPOSITION

Jayanti Patel, Fairlawn, N.J., and Ken-ichi Shimazu, Briarcliff Manor, N.Y., assignors to Polychrome Corporation, Yonkers, N.Y.

Continuation of Ser. No. 289,027, Aug. 3, 1981, abandoned. This application Mar. 28, 1983, Ser. No. 479,612

Int. Cl.³ G03G 5/087, 5/06, 5/09

U.S. Cl. 430—88 **11 Claims**

1. A photoconductive composition, which is dispersible in aqueous compositions, consisting essentially of an admixture of

I. at least one inorganic photoconductor selected from the group consisting of ZnO and TiO_2,

II. at least one photoconductive anthraquinone pigment, and

III. at least one insulating resin soluble or dispersible in an aqueous composition.

4,418,135

THERMALLY-STABLE, INFRARED-SENSITIVE ZINC OXIDE ELECTROPHOTOGRAPHIC COMPOSITIONS ELEMENT AND PROCESS

Karl W. Beeson, Princeton; Himangshu R. Bhattacharjee, and Frederick R. Hopf, both of Parsippany, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Sep. 22, 1982, Ser. No. 421,703

Int. Cl.³ G03G 5/05

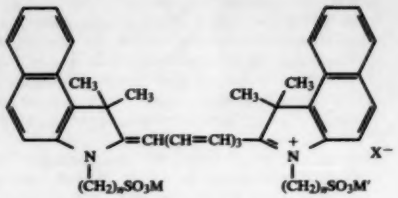
U.S. Cl. 430—93 **18 Claims**

1. A photoconducting composition for use in electrophotography comprising:

(a) photoconducting zinc oxide,

(b) a binder for the zinc oxide comprising a mixture of a styrene acrylate resin and a vinyl alkanoate resin, and

(c) a sensitizing dye selected from those having the general formula



wherein n is an integer in the range between 1 and 7, M and M′ are independently selected from the group consisting of hydrogen and the alkali metals, and X is an acid anion.

10. A photosensitive sheet comprising a substrate having a surface that is coated with the composition of claim 1.

15. A process for preparing an electrophotographic image on a photosensitive sheet comprising the sequential steps of:

(a) electrically charging the coated surface of the photosensitive sheet of claim 10,

(b) imagewise exposing the photosensitive sheet to a beam of electromagnetic radiation whose wavelength is in the range between about 780 and about 840 nm, and

(c) toning the sheet with an electrostatic toner to produce a toned image.

4,418,136

ELECTROPHOTOGRAPHIC ELEMENT COMPRISES ARSENIC SELENIDE DOPED WITH BI

Masahiro Kameda, Ibaragi, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed May 17, 1982, Ser. No. 379,223

Claims priority, application Japan, May 21, 1981, 56-76874

Int. Cl.³ G03G 5/09

U.S. Cl. 430—95 **12 Claims**

1. An electrophotographic element comprising an electrically conductive substrate and a first photoconductive layer on said substrate, said first photoconductive layer consisting essentially of As_2Se_3 containing an amount of Bi metal effective to extend the sensitivity of the As_2Se_3 to include sensitivity to radiation having a wavelength longer than 80 nm, the amount of Bi metal also being effective to maintain the electric charge characteristics of said first photoconductive layer substantially equivalent to those of a layer consisting of As_2Se_3.

4,418,137

ELECTROPHOTOGRAPHIC PROCESS

Yasuo Mitsuhashi, Yokohama, and Masashi Kiuchi, Toride, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 67,006, Aug. 16, 1979, abandoned, which is a division of Ser. No. 913,231, Jun. 6, 1978, Pat. No. 4,206,247. This application Feb. 27, 1981, Ser. No. 238,727

Claims priority, application Japan, Jun. 8, 1977, 52-67587; Jun. 8, 1977, 52-67588; Jun. 8, 1977, 52-67589

Int. Cl.³ G03G 9/14

U.S. Cl. 430—109 **6 Claims**

1. A process for preparing toner particles having hydrophobic fine particles of silica coated thereon which comprises heating a mixture of toner particles and hydrophobic silica fine particles while the mixture floats in a gas so that the hydrophobic silica fine particles are caused to adhere to the surface of the toner particles wherein said hydrophobic fine silica particles have an average particle size of about 1–100 mu.

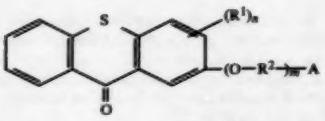
4,418,138

PHOTOPOLYMERIZABLE MATERIALS FOR USE IN PRODUCING STENCILS FOR SCREEN PRINTING

John R. Curtis, Thanet, England, assignor to Sericol Group Limited, London, England

Filed Aug. 25, 1982, Ser. No. 411,565
Claims priority, application United Kingdom, Nov. 3, 1981, 8133114
Int. Cl.³ G03C 1/68, 500/00
U.S. Cl. 430—253 18 Claims

1. An aqueous photopolymerisable composition comprising (1) at least one terminally ethylenically unsaturated monomer, which is dispersible, miscible or soluble in water, (2) at least one tertiary nitrogen-containing compound as accelerator, (3) a water-soluble colloid, and (4) a water-soluble photoinitiator of the formula:



where R^1 is halogen, alkyl, alkoxy, alkylthio, nitro, amino, alkylamino, dialkylamino, hydroxyalkylamino, alkanoylamino, benzoylamino, N-alkanoyl-N-benzoylamino, sulphonamido or acetyl, R^2 is alkylene of 1 to 4 carbon atoms, n is 0, 1 or 2, m is 1 or 2, and A is —COOH, —SO_3H, —OSO_3H, or —OCO-X-COOH (where X is such that HOOC-X-COOH is a di- or tri-carboxylic acid of up to 8 carbon atoms), the aforesaid alkyl, alkoxy, and alkenyl residues containing up to 4 carbon atoms each, or a water-soluble salt thereof.

16. A transparent flexible support sheet coated with a composition according to claim 1 and dried.

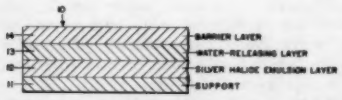
17. A method of producing a stencil for screen printing which comprises irradiating a coated sheet as claimed in claim 16 with actinic light, developing the irradiated sheet and transferring the insolubilised image to a screen.

4,418,139

FILM UNITS CONTAINING THERMALLY INDUCED WATER-RELEASING BENZOTRIAZOLE COMPLEX

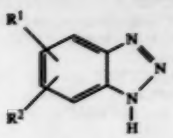
Howard G. Rogers, Weston; Robert D. Eckert; Ronald A. Sahatjian, both of Lexington, and Robert A. Sulesky, Georgetown, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Division of Ser. No. 221,845, Dec. 31, 1980, Pat. No. 4,359,397. This application Sep. 30, 1982, Ser. No. 428,623
Int. Cl.³ G03C 5/24
U.S. Cl. 430—354 17 Claims



13. A photographic process comprising the steps of:

imagewise exposing a photographic film unit comprising a support carrying on one surface a photosensitive silver halide emulsion layer; a silver halide developing agent; a layer comprising a solid complex of water, a benzotriazole of the formula



wherein R^1 and R^2 are independently hydrogen, a monovalent organic radical, halogen, or nitro, and a water-soluble base having a basicity greater than that of said benzotriazole and capable of dissociating to provide an anion and a monovalent or divalent metal cation, said composition having a melting range above 35° C. and being capable of releasing a substantial portion of said water to the internal environment of said film unit when melted; and a substantially water-impermeable barrier layer positioned within said film unit so as to retain said substantial portion of said water sufficiently within said film unit as to permit thermal processing thereof;

heating said film unit to a temperature sufficient to melt said solid composition; and

maintaining said film unit at a processing temperature for a period of time effective to provide a silver image to said film unit.

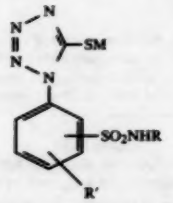
4,418,140

PROCESS FOR THE DEVELOPMENT OF COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hiroyuki Mifune; Shoji Ishiguro; Tadao Shishido, all of Minami-ashigara, and Tatsuo Nishimura, Ashiya, all of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 8, 1982, Ser. No. 366,515
Claims priority, application Japan, Apr. 8, 1981, 56-52771
Int. Cl.³ G03C 7/00
U.S. Cl. 430—351 11 Claims

1. A process for developing a color photographic light-sensitive material which comprises exposing a color photographic light-sensitive material and, thereafter, color developing the exposed light-sensitive material in the presence of a compound represented by the general formula (I):



wherein M is a hydrogen atom, an alkali metal atom, NH_4 or a protective group for the mercapto group which undergoes cleavage by the action of an alkali; R is a hydrogen atom or an alkyl group containing 1 to 3 carbon atoms; and R' is a hydrogen atom or an alkyl group containing 1 to 3 carbon atoms in an amount effective to prevent the formation of development fog while minimizing the inhibition of color development and reduction of sensitivity.

7. A process for developing a color photographic light-sensitive material as claimed in claim 1, wherein said process is carried out at a temperature of from 18° C. to 50° C.

4,418,141

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Hideo Kawaguchi, Minami-ashigara, and Takayuki Inayama, Fujinomiya, both of Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 22, 1981, Ser. No. 333,347
Claims priority, application Japan, Dec. 23, 1980, 55-182613
Int. Cl.³ G03C 1/78
U.S. Cl. 430—530 16 Claims

1. A photographic light-sensitive material comprising a plastic support, at least one photographic light-sensitive emulsion layer on one side of the support, and an antistatic layer on the other side of the support, wherein the antistatic layer comprises a binder having dispersed therein fine particles of at least one crystalline metal oxide selected from the group consisting of ZnO, TiO_2, SnO_2, Al_2O_3, In_2O_3, SiO_2, MgO, BaO, and MoO_3, or a composite oxide thereof, said crystalline metal oxide or composite thereof having a volume resistivity of 10^7 Ω.cm or less, a hydrophobic layer being provided on the antistatic layer, said antistatic layer being between said hydrophobic polymer layer and said support.

4,418,142

LIGHT-SENSITIVE PHOTOGRAPHIC SILVER HALIDE RECORDING MATERIAL

Hans Langen, Bonn; Erich Wolff, Solingen, and Erwin Ranz, Leverkusen, all of Fed. Rep. of Germany, assignors to Agfa Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 2, 1981, Ser. No. 307,858
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1980, 3037912
Int. Cl.³ G03C 1/40, 1/06
U.S. Cl. 430—549 5 Claims

1. Light-sensitive color photographic silver halide recording material consisting of a layer support and applied to this layer at least one light-sensitive gelatine-containing layer containing color couplers for the formation of the image dyes in the three primary colors, a cross-linking agent which activates the carboxyl groups of the gelatine and a compound acting as aldehyde-scavenger, characterised in that the cross-linking agent which activates the carboxyl groups of gelatine is a gelatine hardener selected from carbamoylonium salts, carbamoylpridinium salts and carbamoyloxypyridinium salts, and the compound acting as aldehyde-scavenger corresponds to the following general formula:

wherein Z represents the atoms required for completing a 5- or 6-membered, substituted or unsubstituted carbocyclic ring or a substituted or unsubstituted heterocyclic ring which may contain oxygen, nitrogen or sulfur as heteroatom.

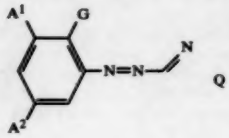
4,418,143

COLOR PHOTOGRAPHIC RECORDING MATERIAL

Peter Bergthaller; Günther Schenk, both of Cologne; Gerhard Wolfrum, Odenthal-Leverkusen; Hans-Volker Runzheimer, Odenthal-Gloebusch, and Holger Heidenreich, Cologne, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 22, 1982, Ser. No. 351,103
Claims priority, application Fed. Rep. of Germany, Feb. 27, 1981, 3107540
Int. Cl.³ G03C 7/00, 1/40, 1/10
U.S. Cl. 430—562 5 Claims

1. The color photographic recording material for the production of color images by the dye diffusion transfer process, containing at least one light-sensitive silver halide emulsion layer and a non-diffusible color-providing compound associated with said light-sensitive layer from which color-providing compound a diffusible azo dye which is capable of forming a complex with metal ions is released under the conditions of alkaline development as a function of the development of the silver halide emulsion layer, wherein the improvement comprises the azo dye corresponds to the following general formula II:



wherein

A^1 and A^2 represent electronegative substituents whose metasigma values σ m, which are defined as follows:

$\sigma_m = \log K_m - \log K^\circ$ where

σ_m is a constant for a given substituent (meta in this case)

K_m is the ionization constant for a meta substituted benzoic acid in water at 25° C. and

K° is the ionization constant for the benzoic acid itself,

conform to at least one of the following three relationships:

1. $\sigma_m(A^1)$, $\sigma_m(A^2) \geqq +0.33$
2. $\sigma_m(A^1)$, $+\sigma_m(A^2) \geqq +0.75$;
3. $\sigma_m(A^1) \geqq +0.33$ and

A^2 represents $—SO_2X$ wherein

X represents H, —OH, $—NH_2$, —NH—Y or a cyclic amino group and

Y represents alkyl, aryl, alkylsulfonyl, arylsulfonyl or acyl,

Q represents a group for completing a 2-amino-3-hydroxypyridine ring, a 4,5-diphenylimidazole ring or a 4-hydroxyisoquinoline ring which is attached through the 1-position; and

G represents a group capable of chelate formation.

4,418,144

PROCESS FOR PRODUCING GAMMA-CYCLODEXTRINS

Minoru Okada, Mishima; Masamitsu Matsuzawa, Fuji; Osamu Uezima, Mishima; Teruo Nakakuki, Ibaragi, and Koki Horikoshi, Tokyo, all of Japan, assignors to Nihon Shokuhin Kako Co., Ltd. and Rikagaku Kenkyusho, both of, Japan

Filed Jul. 27, 1981, Ser. No. 287,252
Claims priority, application Japan, Mar. 6, 1981, 56/31259
Int. Cl.³ C12P 19/20, 19/18
U.S. Cl. 435—96 2 Claims

1. A process for the production of γ-cyclodextrin, which consists of:

preparing a sugar solution containing glucose and α-, β- and γ-cyclodextrins as primary ingredients by reacting glucoamylase having substantially no α-amylase activity with a starch hydrolyzate containing cyclodextrins produced by reacting gelatinized or liquified starch with cyclodextrin glycosyltrasferase;

passing the sugar solution through a column packed with alkali or alkaline earth metal salts or a strongly acidic cation exchange resin to separate α-, β- and γ-cyclodextrins fraction from glucose fraction; and

passing the α-, β- and γ-cyclodextrins fraction through a column packed with gel resin particles to separate and collect γ-cyclodextrin.

4,418,145

XANTHOMONAS CAMPESTRIS ATCC 31601 AND PROCESS FOR USE

William P. Weisrock, Tulsa, Okla., and Edward F. McCarthy, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

Filed Jul. 14, 1980, Ser. No. 167,870

Int. Cl.³ C12P 19/06; C12N 1/20; C12R 1/64

U.S. Cl. 435—104 14 Claims

1. A method for the production of a heteropolysaccharide which comprises continuously culturing a degenerative resistant strain of bacteria designated *Xanthomonas campestris* XCP-19, having the identifying characteristics of ATCC 31601, in an aqueous nutrient comprising essentially assimilable sources of carbon, nitrogen and inorganic substances wherein said medium is continuously fed to a fermentation zone to produce said polysaccharide, and withdrawing the resulting fermented medium from said zone.

4,418,146

PREPARATION OF D-N-CARBAMYL-α-AMINOACIDS AND MICRO-ORGANISMS FOR CARRYING OUT THIS PREPARATION

Rolf Lungershausen, Ludwigshafen; Christoph Martin, Mannheim; Stefan Marcinowski, Ludwigshafen; Hardo Siegel, Speyer, and Werner Kuesters, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

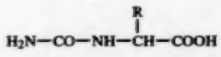
Filed Jul. 28, 1981, Ser. No. 287,697

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1980, 3031151

Int. Cl.³ C12P 13/04; C12N 9/78, 1/20

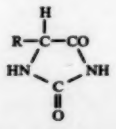
U.S. Cl. 435—106 5 Claims

1. A process for the preparation of a D-carbamyl-α-aminoacid of the formula I



I

where R is alkyl of 1 to 4 carbon atoms, of which one hydrogen can be replaced by NH_2, OH, $-SCH_3$ or SH, or R is benzyl, of which one or two hydrogens can be replaced by OH, or R is phenyl, in which one or two hydrogens can be replaced by OH, acetoxy or C_{1-4}-alkoxy, by enzymatic hydrolysis of a hydantoin of the formula II



II

where R has the above meanings, wherein the enzymatic conversion is effected with the aid of the thermophilic, non-sporulating, hydantoin-cleaving micro-organisms CBS 303.80 or CBS 363.50 or of extracts obtained therefrom.

2. A pure culture of the thermophilic, non-sporulating microorganism CBS 303.80.

4,418,147

ENZYME IMMOBILIZATION IN A STARCH GEL

Johannes Muetgeert, Delft; Petrus H. L. Otto, De Lier, and Frans A. Flippo, Delft, all of Netherlands, assignors to Nederlandse Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel En Verkeer, The Hague, Netherlands

Continuation of Ser. No. 94,055, Nov. 14, 1979, abandoned. This application Jan. 5, 1982, Ser. No. 337,303

Claims priority, application Netherlands, Nov. 20, 1978, 78.11417

Int. Cl.³ C12N 11/10, 11/00, 11/04

U.S. Cl. 435—178 17 Claims

1. An immobilized enzyme consisting of a starch gel, occluding one or more cell-free enzymes, wherein said starch gel is formed by mixing one or more cell-free enzymes with a starch sol or a partially gelled starch gel, said mixture having a starch content of 20-60% by weight, whereupon said mixture gels and the gelled mixture is extruded into strands and said strands are dried and broken into pieces to form shaped structures.

4,418,148

MULTILAYER ENZYME ELECTRODE MEMBRANE

Bruce J. Oberhardt, Mishawaka, Ind., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Nov. 5, 1981, Ser. No. 318,627

Int. Cl.³ C12N 11/12, 11/08, 11/04; C12M 1/40

U.S. Cl. 435—179 15 Claims

1. A method of making a contiguous multilayer membrane of about 40 to about 100 microns in overall thickness suitable for use with an electrochemical sensor in the measurement of an unknown which comprises:

providing as a first layer, a polymer dissolved in an inert organic solvent and casting said polymer in solution onto an inert support surface which is unreactive with said polymer and does not form a bond to said polymer;

permitting said solution to form a film and thereby obtaining a first relatively nonporous dense polymer layer of about 2 to about 5 microns in thickness;

providing as a second layer, a composition comprising a polymer dissolved in an inert organic solvent, mixing said polymer dissolved in solvent with a nonsolvent for said polymer to obtain a dispersion and thereafter casting said dispersion onto said first layer and thereafter permitting said second layer to dry to form a porous polymer layer of about 2 to about 20 microns in thickness and less dense and more porous than the first layer;

providing a third layer comprising an enzyme solution or suspension and depositing said third layer onto the exposed surface of the second layer;

providing as a fourth layer, a composition comprising a polymer dissolved in an inert organic solvent, mixing said polymer dissolved in solvent with a nonsolvent for said polymer to obtain a dispersion and thereafter casing said dispersion onto the exposed surface of the third layer to provide a fourth porous polymer layer of about 2 to about 20 microns in thickness and less dense and more porous than the first layer; and

thereby forming said contiguous multilayer membrane.

4,418,149

FUSED HYBRID GENE

Mark Ptashne; Gail D. Lauer; Thomas M. Roberts, all of Cambridge, Mass., and Keith C. Backman, San Francisco, Calif., assignors to President and Fellows of Harvard College, Cambridge, Mass.

Division of Ser. No. 111,101, Jan. 10, 1980, Pat. No. 4,332,892, which is a continuation of Ser. No. 3,102, Jan. 15, 1979, abandoned. This application Feb. 5, 1982, Ser. No. 346,084

Int. Cl.³ C12N 1/20, 15/00; C12P 21/00; C07H 21/04

U.S. Cl. 435—253 8 Claims

1. A fused hybrid gene capable of expressing native unfused

prokaryotic or eukaryotic protein consisting essentially of (1) a portable promoter including a portion of a bacterial gene having a Shine-Dalgarno sequence and a transcription initiation site recognized by RNA polymerase and containing no protein translational start site, and (2) fused thereto a gene for a native unfused prokaryotic or eukaryotic protein including its translational start site, said portable promoter being located upstream from said translational start site.

4,418,150
YEAST CONTAINING PLASMIDS PROVIDING KILLER CHARACTERISTICS

Norio Gunge, Ebina, Japan, assignor to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Feb. 18, 1982, Ser. No. 349,903
Claims priority, application Japan, Mar. 9, 1981, 56-33453
Int. Cl.³ C12N *1/18, 15/00, 1/16*
U.S. Cl. 435—256 **7 Claims**

1. A *Saccharomyces cerevisiae* yeast strain obtained by incorporating plasmids pGK1-1 and pGK1-2 into a nonkiller *Saccharomyces cerevisiae* yeast strain, said plasmids being obtained from a killer *Kluyveromyces lactis* strain, whereby said obtained *Saccharomyces cerevisiae* yeast strain exhibits the killer character of said killer *Kluyveromyces lactis* strain.

4,418,151
ASSAY PROCESS WITH NON-BOILING DENATURATION

Ronald R. Forand, Maynard, and Edward T. Menz, Jr., Quincy, both of Mass., assignors to Rohm and Haas Company, Philadelphia, Pa.

Filed Mar. 30, 1981, Ser. No. 248,826
Int. Cl.³ G01N *33/36, 33/60*
U.S. Cl. 436—505 **10 Claims**

1. A radioassay process for analysis of the target components folate or Vitamin B_{12} and folate utilizing competitive protein binding which comprises the steps of:

(a) contacting a precise amount of serum sample having folate or Vitaming B_{12} and folate endogenous target components with liquid medium containing a mercaptan reducing agent and radioactively tagged replication(s) of folate or Vitamin B_{12} and folate target component(s) and incubating substantially at room temperature to initiate denaturation (irreversible separation) of the target component(s) from endogenous binder protein(s) in the serum,

(b) providing additional liquid medium containing a means of establishing a pH in the medium at substantially 12.0–14.0 and incubating at substantially ambient temperature to complete the denaturation of the target component(s) from endogenous binder protein(s) in the serum,

(c) reducing the pH to 8–10,

(d) adding simultaneously with the separation or thereafter, binding protein(s) of the target component(s),

(e) incubating to establish binding of target component(s) and tagged replications to the binding protein(s), and

(f) separating unbound tagged replicates from protein bound replicates as separate groups and measuring radioactive emission from one or both groups to provide a count correlatable with the competitive binding result and with target component(s) content of the original serum.

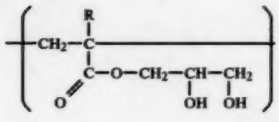
4,418,152
IMMUNOLOGICAL, DIAGNOSTIC REAGENTS HAVING PARTICULATE CARRIERS OF GLYCIDYL ACRYLATE POLYMERS

Shuntaro Hosaka; Yasuo Murao, and Yasuro Kawabata, all of Kamakura, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Apr. 1, 1981, Ser. No. 250,073
Claims priority, application Japan, Apr. 4, 1980, 55-43618
Int. Cl.³ G01N *33/54, 33/76*
U.S. Cl. 436—511 **8 Claims**

1. A diagnostic reagent for immunological testing comprising

(a) a particulate carrier composed of fine particles having an average diameter within the range of 0.03–10 μm, said carrier comprising a cross-linked polymer having a repeating unit represented by the general formula



(I)

wherein R denotes hydrogen or a methyl group and

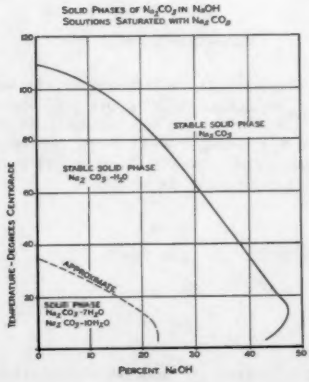
(b) an immunochemical immobilized on said particulate carrier.

3. A diagnostic reagent for immunological testing according to claim 1, wherein said immunochemicals are selected from the group consisting of Treponema pallidum antigen, human chorionic gonadotropin, anti-human chorionic gonadotropin antibody, anti-human IgG antibody, anti-human IgM antibody, aggregated human IgG and protein A.

4,418,153
LAYERED GLASS BATCH PELLETS AND APPARATUS FOR THEIR PRODUCTION

Walter C. Saeman, Cleveland, Tenn., assignor to Olin Corporation, New Haven, Conn.

Division of Ser. No. 238,256, Feb. 25, 1981, Pat. No. 4,354,864, which is a continuation-in-part of Ser. No. 123,153, Feb. 21, 1980, Pat. No. 4,293,324. This application Jul. 28, 1982, Ser. No. 402,505
Int. Cl.³ C03C *1/00, 3/04*
U.S. Cl. 501—29 **7 Claims**



1. Multi-layered glass batch pellets comprised of sand, a calcium carbonate source, and sodium hydroxide, and having a moisture content in the range of from about 4 to about 12 percent by weight, having crystalline sodium carbonate mono-

hydrate as the primary bonding agent between layers and having a homogeneous cross-sectional composition from the interior to the surface.

4,418,154

CO HYDROGENATION PROCESS USING MOLYBDENUM OXYCARBONITRIDE CATALYST

Larry E. McCandlish, Highland Park, and Edwin L. Kugler, Summit, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 216,542, Dec. 15, 1980, abandoned. This application May 3, 1982, Ser. No. 373,886

Int. Cl.³ C07C 1/04

U.S. Cl. 518—714 11 Claims

1. A process for preparing paraffinic hydrocarbons including linear and branched C_1–C_{10} carbon chain numbers comprising contacting a gaseous mixture of CO and H_2 in a CO/H_2 volume ratio of 10:1 to 1:10, respectively, with a catalyst comprised of face-centered cubic molybdenum oxycarbonitride, in which the interstitial oxygen, carbon and nitrogen atoms are distributed throughout the bulk structure, at a temperature of about 100° to 600° C., a pressure of about 0.1 to 100 MPa, and a space velocity of about 100 to 50,000 v/v/hr., and recovering product paraffinic hydrocarbons.

4,418,155

CONVERSION OF SYNTHESIS GAS TO HYDROCARBONS ENRICHED IN LINEAR ALPHA-OLEFINS

Clarence D. Chang, Princeton, and William H. Lang, Pennington, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Mar. 24, 1980, Ser. No. 133,384

Int. Cl.³ C07C 1/04

U.S. Cl. 518—719 5 Claims

1. In the process of catalytically converting synthesis gas to hydrocarbons by contacting the same at elevated temperatures over a catalyst comprising a ZSM-5 type zeolite and a carbon oxide reducing component, the improvement which comprises utilizing a ZSM-5 type zeolite which is substantially catalytically inert and which contains said carbon oxide reducing component in the pores thereof and obtaining a hydrocarbon product enriched in C_4–C_6 linear alpha olefins.

4,418,156

FIRE RETARDANT FINE PARTICULATE EXPANDABLE STYRENE POLYMERS

Josef K. Rigler, Recklinghausen; Ekkehard Wienhöfer, Marl; Horst Leithäuser, Marl, and Karl Trukenbrod, Marl, all of Fed. Rep. of Germany, assignors to Chemische Werke Hüls AG, Marl, Fed. Rep. of Germany

Division of Ser. No. 380,070, May 20, 1982, Pat. No. 4,393,146. This application Apr. 19, 1983, Ser. No. 486,429

Claims priority, application Fed. Rep. of Germany, Jun. 5, 1981, 3122342

Int. Cl.³ C08J 9/20, 9/22

U.S. Cl. 521—56 4 Claims

1. In a particulate molding composition for the production of foamed articles consisting essentially of a mixture of an expanding agent, a fire-retardent organic halogen compound and a polymerized styrene monomer or styrene monomer in admixture with comonomers, the improvement comprising said composition containing about 0.0001 to 0.1 percent by weight based on said monomers and comonomers of esters of aliphatic dicarboxylic acids and aliphatic epoxy alcohols, said esters having at least 11 carbon atoms and said esters soluble in said monomers and comonomers.

4,418,157

LOW DENSITY SILICONE FOAM COMPOSITIONS AND METHOD FOR MAKING

Frank J. Modic, Scotia, N.Y., assignor to General Electric Company, Waterford, N.Y.

Filed Mar. 17, 1983, Ser. No. 476,173

Int. Cl.³ C08J 9/00

U.S. Cl. 521—82 36 Claims

1. A method of preparing a silicone foam of reduced density comprising mixing with a foamable silicone composition having a polydiorganosiloxane base polymer, an organohydrogen siloxane and a platinum catalyst, an amount of a resinous copolymer effective for reducing the density of the foam, said copolymer being selected from the group consisting of copolymers comprising $R_3SiO_{0.5}$ units and SiO_2 units, the ratio of $R_3SiO_{0.5}$ units to SiO_2 units ranging from about 0.25 to about 0.8:1, and copolymers comprising $R_3SiO_{0.5}$ units, R_2^1SiO units and SiO_2 units, where the ratio of monofunctional units to tetrafunctional units is from about 0.25 to about 0.8:1 and the ratio of difunctional units to tetrafunctional units is from 0 to about 0.1:1, where R and R^1 are selected from the group consisting of alkyl radicals, aryl radicals, aralkyl radicals, alkaryl radicals, cycloalkyl radicals, vinyl radical, allyl radical and fluoroalkyl radicals and allowing the foamable composition to simultaneously foam and cure.

4,418,158

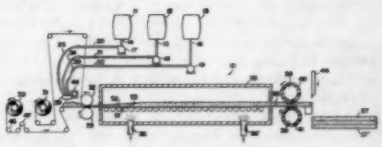
POLYOXYALKYLENE/UNSATURATED DIESTER REACTION PRODUCT FOR CELLULAR FOAM STABILIZATION

Richard L. Frentzel, Clearwater, Fla., assignor to The Celotex Corporation, Tampa, Fla.

Division of Ser. No. 282,322, Jul. 10, 1981, Pat. No. 4,365,024. This application Sep. 29, 1982, Ser. No. 426,581

Int. Cl.³ C08J 9/14

U.S. Cl. 521—115 41 Claims



1. A foam material comprising the mixture of:

A. polyurethane polymer forming ingredients,

B. a blowing agent, and

C. a surfactant which comprises the reaction product consisting of

(a) a polyoxyalkylene adduct having the formula

$$H\text{-}(\text{polyoxyalkylene chain})_t\text{-}R,$$

wherein R is an organic or inorganic radical and t is the number of polyoxyalkylene chains reacted onto R, and

(b) an esterified unsaturated dibasic acid having the formula

$$T^1O_2C\text{-}C_uH_{2u-2}\text{-}CO_2T^2$$

wherein u is 2 or 3 and T^1 and T^2 are identical or different and represent a straight or branched, saturated or unsaturated hydrocarbon chain, in the presence of an effective amount of a free-radical initiator.

4,418,159

PROCESS FOR THE PRODUCTION OF POLYURETHANES AND A STORABLE INTERMEDIATE PRODUCT FOR CARRYING OUT THIS PROCESS

Werner Rasshofer; Richard Kopp, both of Cologne, and Reiner Paul, Muehlheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

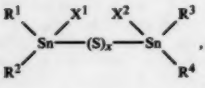
Filed Oct. 7, 1982, Ser. No. 433,198

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1981, 3141117

Int. Cl.³ C08G 18/14

U.S. Cl. 521—121 **10 Claims**

1. A process for the production of polyurethanes by reacting polyisocyanates with organic compounds containing at least two isocyanate-reactive hydrogen atoms and having molecular weights of from 400 to 10,000 in the presence of activators, characterized in that the activators used are compounds corresponding to the general formula:



wherein

R^1, R^2, R^3 and R^4 may be the same or different and may represent C_1–C_{20}-alkyl, C_5–C_7-cycloalkyl, C_6–C_{14}-aryl or C_7–C_{30}-alkaryl;

X^1 and X^2 may be the same or different and represent a halogen radical or a radical of the formula $—OR^5$, $—SR^6$ or

with the proviso that X^1 and X^2 cannot both represent a halogen atom;

R^5, R^6 and R^7 may be the same or different and represent C_1–C_{20}-alkyl, C_5–C_7-cycloalkyl, C_6–C_{14}-aryl or C_7–C_{30}-alkaryl; and $1 \leqq x \leqq 4$.

4,418,160

POLYAMINES AND PROCESSES FOR THE PRODUCTION OF SUCH POLYAMINES AND OF POLYURETHANE PLASTICS THEREFROM

Werner Rasshofer, Cologne; Dieter Dieterich, Leverkusen, and Holger Meyborg, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 308,326, Oct. 5, 1981, Pat. No. 4,386,218. This application Aug. 30, 1982, Ser. No. 412,614

Claims priority, application Fed. Rep. of Germany, Oct. 21, 1980, 3039600

Int. Cl.³ C08G 18/14

U.S. Cl. 521—159 **2 Claims**

1. A process for the production of a polyurethane comprising:

(a) reacting a polyisocyanate with

(b) a polyamine and optionally

(c) other compounds having isocyanate-reactive groups, optionally

(d) in the presence of an auxiliary agent and/or additive

in which the polyamine (b) is a polyamine having urethane and/or urea and/or biuret groups made by:

(i) mixing an isocyanate prepolymer having urethane and/or urea and/or biuret groups with an aqueous base solution at a temperature of/from 0° to 80° C. and in a quantity such that the equivalent ratio of hydroxyl to isocyanate groups is between from 0.3:1 to ≧1.01:1,

(ii) treating the product of (a) with an acid ion exchanger to form an amine; and

(iii) separating the product amine from any other materials present.

4,418,161

RESIN COATED SAND AND METHOD FOR PRODUCING SAME

Noriaki Matsushima; Yukio Saeki, and Yukio Tokunaga, all of Fujieda, Japan, assignors to Sumitomo Durez Company, Ltd., Tokyo, Japan

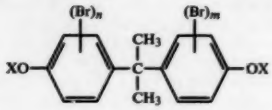
Filed Aug. 20, 1982, Ser. No. 410,117

Claims priority, application Japan, Feb. 9, 1981, 56-136953

Int. Cl.³ C08K 3/36

U.S. Cl. 523—145 **17 Claims**

1. A resin coated foundry sand with improved shake-out properties which comprises foundry sand coated with a lubricant-containing phenolic resin and one or more aromatic bromides of the following formula:



wherein:

Br positions are ortho to XO—,

m and n are integers selected from 0, 1 and 2, but not zero at the same time and,

x is selected from —H, $—CH_2—CH_2—OH$, $—CH_2—CH=CH_2$, and $—CH_2CHBrCH_2B$.

4,418,162

PROCESS FOR TREATING THE SURFACE OF POLYACETAL RESIN

Takuzo Kasuga; Yukio Ikenaga, and Masami Yamawaki, all of Fuji, Japan, assignors to Polyplastics Co., Ltd., Osaka, Japan

PCT No. PCT/JP81/00101, § 371 Date Dec. 28, 1981, § 102(e) Date Dec. 28, 1981, PCT Pub. No. WO81/03178, PCT Pub. Date Nov. 12, 1981

PCT Filed Apr. 30, 1981, Ser. No. 339,454

Claims priority, application Japan, Apr. 30, 1980, 55-57280

Int. Cl.³ C08K 9/04

U.S. Cl. 523—205 **8 Claims**

1. A method for the surface treatment of polyacetal resin characterized in that the resin is treated with an acidic solution containing chloride ions and sulfuric acid ions, wherein the hydrogen ion content of the solution is about 0.6 to about 1.5 equivalents per 100 grams of the solution and wherein the weight ratio of hydrogen chloride to sulfuric acid is about 1:20 to 20:1.

4,418,163

WATER ABSORBING COMPOSITE COMPRISING INORGANIC POWDER ENCAPSULATED WITH A CROSSLINKED CARBOXYL POLYMER

Tetsuo Murakami; Hirotoshi Miyazaki, and Hiroshi Harima, all of Ibaraki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Filed Aug. 13, 1982, Ser. No. 407,894

Claims priority, application Japan, Aug. 17, 1981, 56-129132

Int. Cl.³ C08L 33/02; C08K 3/34, 3/00

U.S. Cl. 523—205 **16 Claims**

1. A water absorbing composite comprising:

an inorganic powder; and

a highly absorbent resin;

wherein said highly absorbent resin covers totally the surfaces of the individual particles of said powder, and

wherein said resin is obtained by reacting a basic substance with a polymer containing at least 40 mol % of repeating monomeric units of an α,β-unsaturated compound having

in its molecule one or two carbonyl groups, on one or two other groups convertible to a carboxyl group or groups, and then crosslinking the reaction product with a polyamine.

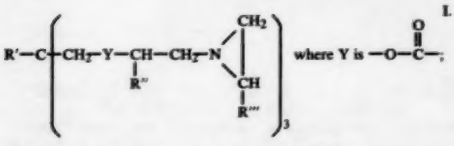
4,418,164

ARAMID FIBER COATED WITH POLYFUNCTIONAL AZIRIDINE

Francis M. Logullo, Sr., Hockessin, Del., and Yun-Tsi Wu, Newtown Square, Pa., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jul. 19, 1982, Ser. No. 399,689
Int. Cl.³ C08L 67/06
U.S. Cl. 523—207 **9 Claims**

1. Aramid fiber coated with an aziridine of the formula



I

where Y is $-O-\overset{O}{\overset{\|}{C}}-$;

R′ is alkyl or hydroxyalkyl of from 1 to 4 carbon atoms; R″ and R‴ are independently selected from hydrogen and methyl.

4,418,165

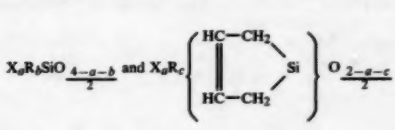
OPTICALLY CLEAR SILICONE COMPOSITIONS CURABLE TO ELASTOMERS

Keith E. Polmanteer, and Harry L. Chapman, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 156,003, Jun. 3, 1980, abandoned. This application Oct. 7, 1981, Ser. No. 309,302
Int. Cl.³ C08L 83/06
U.S. Cl. 523—210 **76 Claims**

1. An optically clear composition curable to an elastomer which comprises:

(A) 100 parts by weight of at least one polydiorganosiloxane consisting essentially of siloxane units selected from the group consisting of siloxane units of the unit formula



wherein each R radical is selected from the group consisting of alkyl radicals of from 1 to 6 inclusive carbon atoms, cyclohexyl radicals, phenyl radicals, halogenated alkyl radicals of from 1 to 10 inclusive carbon atoms and alkenyl radicals of from 2 to 6 inclusive carbon atoms, each X being selected from the group consisting of hydroxyl radicals, hydrogen radicals and alkoxy radicals of from 1 to 6 inclusive carbon atoms, at least 50 percent of the total amount of R radicals and

radicals present in said polydiorganosiloxane being methyl radicals, a having a value of from 0 to 1 inclusive, b having a value of from 1 to 3 inclusive and c having a value of from 0 to 1 inclusive, the sum of a+b having a value of from 1 to 3 inclusive, the sum of a+c having a value of from 0 to 1 inclusive, the values of a, b and c being such that the ratio of total R radicals and

radicals to total silicon atoms present in said polydiorganosiloxane is in the range of from 1.98/1 to 2.02/1 inclusive, said polydiorganosiloxane having a viscosity of at least 0.1 pascal.seconds at 25° C., and

(B) 15 to 120 parts by weight of a hydrophobic reinforcing silica filler consisting essentially of surface-treated silica particles wherein said particles consist essentially of $SiO_{4/2}$ units containing a sufficient amount of organosiloxy units chemically bonded to the surface of said particles to render the silica filler hydrophobic, said organosiloxy units being selected from the group consisting of $R_3SiO_{1/2}$ units, R_2SiO units, $O_{1/2}R_2SiO(R_2SiO)_dSiR_2O_{1/2}$ units, $XR_2SiO(R_2SiO)_dSiR_2O_{1/2}$ units and mixtures thereof where each R and each X are as above defined and d has an average value of from 1 to 12 inclusive, wherein substantially all of said particles have an aggregate particle size of no greater than 4,000 Angstroms in their largest dimension and are of an overall particle size distribution which is sufficiently small such that when 60 parts by weight of said filler is homogeneously mixed with 100 cubic centimeters at 23°±2° C. of a polydiorganosiloxane of the type described in (A) to form a test blend, wherein (1) the refractive index (at 25° C., sodium D line) of the polydiorganosiloxane chosen for use in said blend differs from the refractive index (at 25° C., sodium D line) of the filler by at least 0.025 units and (2) the organosiloxy units employed to render said filler hydrophobic are primarily the same as the R radicals and the

radicals present in the polydiorganosiloxane chosen for use in said blend, then the test blend possesses a haze value of less than 4% per 2.54 millimeter thickness of said blend at 23°±2° C. according to the procedure set out in ASTM D1003-61;

wherein the mixture of (A) and (B) is an optically clear composition possessing a luminous transmittance value of at least 85% and a haze value of no greater than 4% per 2.54 millimeter thickness of said composition at 23°±2° C. according to the procedure set out in ASTM D1003-61.

4,418,166

HIGH TEMPERATURE RESISTANT ADHESIVE BONDING COMPOSITION OF EPOXY RESIN AND TWO-PART HARDENER

Joseph J. Chesney, Jr., Plainsboro, and Robert E. Schaefer, Hillsdale, both of N.J., assignors to Tile Council of America, Inc., Princeton, N.J.

Filed Jul. 14, 1981, Ser. No. 283,133
Int. Cl.³ C09J 3/14, 3/16
U.S. Cl. 523—400 **12 Claims**

1. A solventless, cross-linked adhesive bonding composition which cures and/or gels in the presence of water comprising a resin base portion and a filled hardener portion; said resin base portion comprising an epoxy resinous material containing terminal epoxy groups and being essentially free from units derived from vegetable oils and aliphatic ethers; said filler hardener portion comprising the combination of a modified polyamine and polyamido-amine, said modified polyamine is

comprised of the reaction product of an aliphatic polyamine and a compound selected from the group consisting of aliphatic and aromatic mono and di epoxides, mono and dihydric phenols, aldehydes, nitriles and mixtures of any of the foregoing.

4,418,167

THERMOPLASTIC ELASTOMER BLENDS WITH BITUMEN

Georg G. A. Böhm; Lee E. Vescelius, and Gary R. Hamed, all of Akron, Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 140,905, Apr. 16, 1980, which is a continuation-in-part of Ser. No. 1,623, Jan. 8, 1979, Pat. No. 4,250,273, which is a continuation-in-part of Ser. No. 879,308, Feb. 21, 1978, abandoned, which is a division of Ser. No. 806,306, Jun. 13, 1977, abandoned. This application Sep. 17, 1981, Ser. No. 303,242

Int. Cl.³ C08L *95/00*

U.S. Cl. 524—68 **4 Claims**

1. A process for making a thermoplastic elastomer blend composition, comprising the steps of

providing a blend of a largely crystalline 1-olefin polymer, a random styrene-butadiene rubber and a bitumen,

the amount of said 1-olefin polymer ranging from about 30 to about 45 parts by weight, the amount of said styrene-butadiene rubber ranging from about 65 to about 25 parts by weight, the amount of said bitumen ranging from about 10 to about 40 parts by weight,

said 1-olefin polymer selected from the class consisting of a homopolymer and a copolymer made from 1-olefin monomers having from 2 to about 20 carbon atoms, said homopolymer or said copolymer having a melting point of at least 90° C., and

mixing said blend at a temperature at or above the melting point of said 1-olefin polymer and forming a reprocessable thermoplastic elastomer blend.

4,418,168

PROCESS FOR IMPARTING STABILITY TO PARTICULATE VINYLIDENE CHLORIDE POLYMER RESINS

Earl H. Johnson, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 18, 1982, Ser. No. 359,347

Int. Cl.³ C08K *5/15, 5/36;* C08L *27/08*

U.S. Cl. 524—109 **16 Claims**

1. In a method for imparting stability against decomposition to a particulate copolymer resin, the copolymer having polymerized therein a major amount of vinylidene chloride and at least one monoethylenically unsaturated monomer copolymerizable therewith, stability being imparted by blending an effective amount of at least one oil insoluble particulate inorganic stabilizer with the resin, the improvement comprises forming a generally uniform dispersion of the stabilizer in a liquid plasticizer, the dispersion then being placed generally on and/or in the resin particles.

4,418,169

STABILIZED PVC RESINS

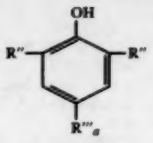
Ambrose J. Gibbons, Jr., East Brunswick, and Robert C. Ringwood, Jr., Sewaren, both of N.J., assignors to M & T Chemicals Inc., Woodbridge, N.J.

Filed Sep. 4, 1962, Ser. No. 221,366

Int. Cl.³ C08K *5/57*

U.S. Cl. 524—178 **18 Claims**

1. A novel heat and light stable halogen-containing vinyl polymer composition comprising a halogen-containing vinyl polymer; a stabilizing amount of a synergistic stabilizer combination of a first stabilizer having the formula $R_2Sn(OOCCH{=}CHCOOR')_2$ wherein R is an alkyl radical containing less than about 10 carbon atoms, and R' is selected from the group consisting of alkyl, aryl, alkaryl, aralkyl, alkenyl, cycloalkyl, and cycloalkenyl radicals containing less than about 22 carbon atoms; and a second stabilizer having the formula



wherein R'' is a branched alkyl radical containing less than about 10 carbon atoms, R''' is an alkyl radical containing less than about 10 carbon atoms, and a is a number selected from the group consisting of 0 and 1.

4,418,170

METHOD FOR STABILIZING ORGANIC POLYMERS AGAINST OXIDATIVE DECOMPOSITION

Wolfgang von Gentzkow, Kleinsendelbach, and Manfred Schmiedel, Nürnberg-Grossgründlach, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 19, 1982, Ser. No. 399,206

Claims priority, application Fed. Rep. of Germany, Aug. 6, 1981, 3131221

Int. Cl.³ C08K *5/25*

U.S. Cl. 524—193 **7 Claims**

1. A method for stabilizing organic polymers against copper-catalyzed oxidative decomposition, comprising forming a paste containing finely-crystalline N,N'-bis-salicyloyl hydrazine finely-distributed in a liquid to wax-like aliphatic hydrocarbon of low volatility, and admixing said paste with said organic polymers.

4,418,171

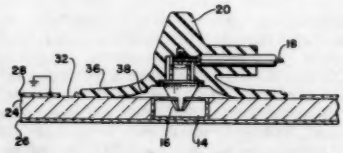
ANTI-TRACKING MATERIAL FOR HIGH VOLTAGE APPLICATIONS

Harold E. Hall, Middlefield, Ohio, assignor to Blasius Industries, Inc., Bedford, Ohio

Division of Ser. No. 228,280, Jan. 26, 1981, abandoned. This application Feb. 16, 1982, Ser. No. 348,322

Int. Cl.³ C08K *5/54*

U.S. Cl. 524—268 **17 Claims**



1. In a high voltage insulated connector for a high voltage electrical connection to a device having an insulating surface surrounding said connection, said connector comprised of a metallic electrical clip, a cup formulated from an elastomeric insulating material surrounding said metallic clip and having a skirt with a surface adapted to be pressed against said insulating surface over a wide area, the improvement which comprises an insulating oil incompatible with said elastomeric insulating material dispersed throughout the material of said cup and exuding from said material to fill the interface between said skirt surface and said insulating surface.

4,418,172

POLYESTER COMPOSITION CONTAINING 2-METHYL-1,3-PROPYLENE GLYCOL DIBENZOATE

Takuzo Kasuga, Fuji; Yuzo Toga, Himeji; Ichiro Okamoto, Himeji, and Katsuhiko Takahashi, Fuji, all of Japan, assignors to Daicel Chemical Industries, Ltd., Sakai and Polyplastics Co., Ltd., Osaka, both of, Japan

Filed Dec. 13, 1982, Ser. No. 449,288

Claims priority, application Japan, Dec. 28, 1981, 56-214122

Int. Cl.³ C08K 3/38, 5/12; C08L 67/02

U.S. Cl. 524—292 5 Claims

1. A polyester composition comprising polyethylene terephthalate or a polyester containing at least 80% of ethylene terephthalate recurring units which further contains 0.1 to 15 wt. % of 2-methyl-1,3-propylene glycol dibenzoate.

4,418,173

VULCANIZABLE RUBBER MIXTURE AND VULCANIZING PROCESS FOR SUCH A RUBBER MIXTURE

Walter Brachmann, Nonnenhorn; Horst Kornau, and Klaus Thiel, both of Lindau, all of Fed. Rep. of Germany, assignors to Metzeler Kautschuk GmbH, Munich, Fed. Rep. of Germany

Filed May 27, 1981, Ser. No. 268,096

Claims priority, application Fed. Rep. of Germany, May 31, 1980, 3020746

Int. Cl.³ C08K 3/22; C08L 9/02, 9/06, 61/10

U.S. Cl. 524—425 5 Claims

1. Vulcanizable rubber mixture for producing an area of leather-hard rubber for a composite profile of leather-hard rubber/soft rubber, consisting essentially of

(a) 100 parts by weight of a rubber selected from the group consisting of natural rubber, polyisoprene rubber, styrene butadiene rubber, polybutadiene rubber, and acrylonitrile butadiene rubber and mixtures thereof,

(b) 12 to 40 parts by weight of sulfur,

(c) 4 to 15 parts by weight reinforcement resin, selected from the group consisting of phenol-formaldehyde resin and styrene butadiene polimerisate resin

(d) 3 to 4 parts by weight accelerator

(e) 7 to 15 parts by weight zinc oxide, said composite profile in the vulcanization thereof heated by hot air to 180°–280° C. and rapidly cooling the vulcanized composite product to 10°–50° C. yields a shore D hardness for the leather-hard rubber.

4,418,174

PROCESS FOR THE PREPARATION OF POLYESTERS USING MANNITOL OR SORBITOL DERIVATIVES, MIXTURES OF POLYESTERS AND THESE MANNITOL OR SORBITOL DERIVATIVES AND THE USE THEREOF FOR THE PRODUCTION OF AQUEOUS STOVING LACQUERS

Rolf Dhein, Krefeld; Lothar Bäcker, Dormagen, and Jochen Schoeps, Krefeld, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 8, 1982, Ser. No. 366,464

Claims priority, application Fed. Rep. of Germany, Apr. 14, 1981, 3115071

Int. Cl.³ C08L 51/00, 67/00

U.S. Cl. 524—539 2 Claims

1. Mixtures of:

(A) from 10 to 90% by weight, of polyesters having an average molecular weight $\bar{M}_n$ of from 1,000 to 10,000,

(B) from 10 to 50% by weight of reactive diluent,

(C) up to 50% by weight of water, and

(D) from 0 to 50% by weight of aminoplast resin,

the percentages being based on the total of the components A, B and D, characterised in that the reactive diluent B is dianhydromannitol, dianhydrosorbitol, dianhydromannitol semi-ester and/or dianhydrosorbitol semi-ester or a salt of these compounds.

4,418,175

CATIONIC SIZING AGENTS FOR PAPER

Joachim Probst, Cologne; Günter Kolb, Leverkusen; Friedhelm Müller, Odenthal, and Heinz Bäumgen, Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 226,866, Jan. 21, 1981, abandoned. This application Dec. 11, 1981, Ser. No. 329,721

Claims priority, application Fed. Rep. of Germany, Jan. 25, 1980, 3002687

Int. Cl.³ C08F 220/46

U.S. Cl. 524—555 4 Claims

1. A method of sizing paper comprising treating the paper with an aqueous 10 to 30% by weight solution of a statistical terpolymer having an average molecular weight of from 10,000 to 70,000 containing quaternized amino groups and having a regular chemical structure of

(a) from 8 to 20%, by weight of N,N-dimethylaminoethyl acrylate and/or N,N-dimethylaminoethyl methacrylate;

(b) from 45 to 80% by weight, of styrene; and

(c) from 8 to 35%, by weight, of acrylonitrile;

the sum of (a) to (c) being 100%, by weight, and at least 10% of the dimethylamino groups of the terpolymer being quaternized and the remainder protonated.

4,418,176

SELF-CRIMPING ACRYLIC FIBER FROM A MELT OF TWO NON-COMPATIBLE POLYMERS

William E. Streetman, Gulf Breeze, and Shashikumar H. Daftary, Pensacola, both of Fla., assignors to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 129,765, Mar. 12, 1980, Pat. No. 4,301,104. This application Jun. 2, 1981, Ser. No. 269,076

Int. Cl.³ C08L 23/06, 23/12, 33/20

U.S. Cl. 525—57 4 Claims

1. A self-crimping, melt-spun acrylonitrile polymer fiber comprising as the continuous fiber matrix a first polymer comprising from about 80 to about 99 weight percent acrylonitrile and from about 1 to about 20 weight percent of one or more monomers copolymerizable with acrylonitrile and heterogeneously dispersed within said fiber matrix a second polymer selected from the group consisting of polyethylene and polypropylene incompatible with said first polymer and having thermal and/or hydrophilic properties which differ from those of said first polymer by an amount sufficient to provide self-crimping properties to said fiber, said first polymer constituting the major weight proportion of said fiber.

4,418,177

THERMOSETTING ADHESIVE COMPOSITIONS AND USE

Fumihiro Doura, Sakai; Masamitsu Nakabayashi, Sennan, and Taiji Morimoto, Kawanishi, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Filed Jan. 22, 1982, Ser. No. 341,700

Claims priority, application Japan, Jan. 26, 1981, 56-10548

Int. Cl.³ C08L 23/26

U.S. Cl. 525—57 11 Claims

1. A thermosetting adhesive composition which contains

(a) a half-ester product of a saponified ethylene/vinyl ester copolymer with a dicarboxylic acid, the esterification degree being 10 to 90%,

(b) a liquid epoxy resin having an epoxide equivalent of about 100 to 350, the component (b) being used in the amount of about 1/100 to 1.5 times by weight to the component (a), and

(c) a polymer bearing two or more carboxyl groups selected from a polyester having an acid value of about 10 to 100 and a modified butadiene/acrylonitrile copolymer having

a molecular weight of ca. 1,000 to 10,000, the component (b) being in an amount of about 0.1 to 10 equivalent of the epoxide per one equivalent of the carboxyl groups of the components (a) and (c).

4,418,178

IMPACT MODIFIED POLYMERS OF CYCLOOLEFINS

Elmer J. DeWitt, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 29, 1982, Ser. No. 427,368

Int. Cl.³ C08L *23/06, 23/12, 45/00, 9/00*

U.S. Cl. 525—97 **11 Claims**

1. Process for preparing impact modified polycycloolefins comprising feeding a liquid mix into a mold maintained at an elevated temperature whereby ring opening polymerization in bulk of said liquid mix is thermally initiated, and extracting molded impact modified polycycloolefin from the mold; said liquid mix comprising an organoammonium catalyst selected from organoammonium molybdates and tungstates, an alkoxyalkylaluminum halide cocatalyst or reactants needed to make said cocatalyst in situ, at least one monomer containing at least one norbornene group, a crystalline polyolefin selected from lower polyolefin powders or polyvinylidene fluoride powder and a rubbery polymeric material, the amount of said polyolefin or polyvinylidene fluoride and said rubbery material being sufficient to render said polycycloolefin ductile which occurs at a notched Izod of about 250 J/M and above.

4,418,179

IMPACT MODIFIED POLYCYCLOOLEFINS

Elmer J. DeWitt, Cuyahoga Falls; Robert J. Minchak, Parma Heights; Biing-Lin Lee, Broadview Heights, and George M. Benedikt, Lakewood, all of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Sep. 29, 1982, Ser. No. 427,369

Int. Cl.³ C08L *23/06, 23/12, 45/00*

U.S. Cl. 525—249 **10 Claims**

1. Process for preparing impact modified polycycloolefins comprising feeding a liquid mix into a mold maintained at an elevated temperature whereby ring opening polymerization in bulk of said liquid mix is thermally initiated, and extracting molded impact modified polycycloolefin from the mold; said liquid mix comprising an organoammonium catalyst selected from organoammonium molybdates and tungstates, an alkoxyalkylaluminum halide cocatalyst or reactants needed to make said cocatalyst in situ, at least one monomer containing at least one norbornene group, and a sufficient amount of an impact modifier consisting essentially of a material selected from crystalline lower polyolefin powders, polyvinylidene fluoride powder and mixtures thereof to impart at least a doubling of impact strength when compared to the impact strength of the neat polymr of said monomer(s), measured by the notched Izod test.

4,418,180

PREPARATION OF BRANCHED BLOCK COPOLYMERS

Gerhard Heinz, Weisenheim; Burghard Schmitt, Worms; Ingo H. Dorn, Dannstadt-Schauernheim; Hermann Gausepohl, Mutterstadt; Karl Gerberding, Wachenheim; Rudolf H. Jung, Worms; Hans Mittnacht, Weinheim; Jürgen Pohrt, Mannheim, and Paul Witimer, Landau, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Aug. 27, 1981, Ser. No. 296,849

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032832

Int. Cl.³ C08F *297/04*

U.S. Cl. 525—314 **1 Claim**

1. A process for the preparation of branched block copolymers of from 60 to 95% by weight of a monovinyl-aromatic monomer and from 40 to 5% by weight of a conjugated diene of 4 to 8 carbon atoms by polymerizing the monomers in an inert solvent in the presence of a monolithium-hydrocarbon as the initiator, wherein, in a first process stage (a), from 50 to 80, or where necessary at most 90, % by weight of the total amount of monovinyl-aromatic compound are polymerized to virtually complete conversion in the presence of a relatively small amount of the monolithium-hydrocarbon, and thereafter, in a second process stage (b), an additional amount of initiator, which may be equal to or greater than the originally employed amount of initiator, is added to the reaction solution, after which a further 1–30% by weight of the total amount of monovinyl-aromatic monomer can be added, the sum of the amounts of monovinyl-aromatic monomer added in the first and second process stages being at most 90% by weight of the total amount of monovinyl-aromatic monomer, and any such monovinyl-aromatic monomer added in the second process stage is polymerized to virtually complete conversion, after which, in a further process stage (c), the remainder of the monovinyl-aromatic monomer and all of the conjugated diene are added, at least predominantly in the form of a mixture, and are polymerized, and finally, after virtually complete conversion of the monomers, the mixture of the resulting linear block copolymers, having active terminal lithium-carbon bonds, is subjected to coupling by addition of a polyfunctional coupling agent, with stirring, to form branched block copolymers, in which process 30–70% by weight of the total amount of vinyl-aromatic monomer to be reacted in process stage (a) is initially taken and 70–30% by weight is added, in the feed, during the polymerization in such a way that the polymerization temperature, which at the start of the polymerization is from 30° to 40° C., is kept at from 45° to 70° C., with use of reflux cooling, during stage (a), after completion of the monomer feed the reaction temperature is lowered to 30°–40° C. by evaporative cooling before fresh initiator is added in order to carry out stage (b) or (c), if stage (b) is carried out, the same temperature profile as for stage (a) is employed, and furthermore the polymerization of the remaining vinyl-aromatic monomer and the conjugated diene in stage (c) is carried out in such as way that the reaction temperature does not rise above 90°–110° C., and finally, after completion of the polymerization, and preferably without prior cooling, a suitable liquid coupling agent is run undiluted into the reaction mixture.

4,418,181

POLYIMIDES HAVING BIS-MALEIMIDE TERMINAL GROUPS

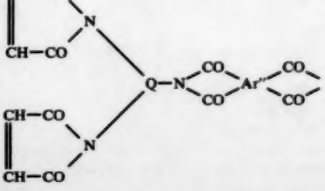
Walter J. Monacelli, St. Petersburg, Fla., assignor to Plastics Engineering Company, Sheboygan, Wis.

Filed May 26, 1981, Ser. No. 267,379

Int. Cl.³ C08G *73/10, 73/12*

U.S. Cl. 525—426 **27 Claims**

1. A tetra-maleimide polyimide having the formula:



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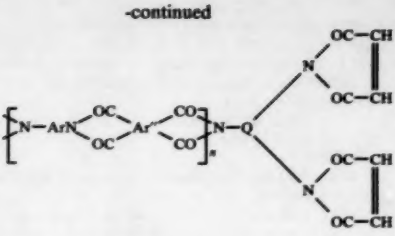


wherein

Q is a trivalent aromatic radical;

Ar'' is a tetravalent aromatic radical, the four carbonyl groups being attached directly to separate carbon atoms of said aromatic radical and each pair of carbonyl groups being attached to adjacent carbon atoms or peri carbon atoms in Ar'';

Ar is a divalent aromatic radical; and

n is zero or an integer having a value of 1–20.

4,418,182

HIGH SOLIDS COATINGS FROM NEW TETRAHYDROXY OLIGOMERS

Mohinder S. Chattha, Livonia, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Dec. 28, 1981, Ser. No. 334,800

Int. Cl.³ C08L *67/02, 63/02*

U.S. Cl. 525—438 **26 Claims**

1. A thermosetting coating composition adapted for low temperature bake applications comprising:

(A) a tetrahydroxy oligomer having a number average molecular weight of between about 600–2000 and being the reaction product of:

(i) an ester containing pendant hydroxyl and carboxyl functionality and being made by a reaction wherein the reactants consist essentially of:

(a) a C_3–C_{10} aliphatic branched diol and

(b) an alkyl hexahydrophthalic anhydride, wherein (a) and (b) are combined in the reaction mixture in an amount sufficient to allow reaction in about a 1:1 molar ratio; and

(ii) a diepoxide having a number average molecular weight between about 130–1500, wherein (i) and (ii) are combined in the reaction mixture in an amount sufficient to allow reaction in about a 2:1 molar ratio;

(B) an amine-aldehyde crosslinking agent;

(C) 0–50 weight percent based on the total weight of (A), (B), (C) and (D) of a hydroxy functional additive having a number average molecular weight ($\overline{M}_n$) of between about 150–6000; and

(D) solvent,

said amine-aldehyde crosslinking agent being included in said composition in an amount sufficient to provide at least about 0.60 equivalents of nitrogen crosslinking functionality for each equivalent of hydroxyl functionality included in said composition either on said tetrahydroxy oligomer or as a hydroxyl group of said hydroxy functional additive.

4,418,183

METHOD FOR THE PRODUCTION OF HIGH CONCENTRATIONS OF EMULSION POLYMERS

Albert C. Chiang, Danbury, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Nov. 12, 1981, Ser. No. 320,360

Int. Cl.³ C08F *2/24*

U.S. Cl. 526—80 **12 Claims**

1. A process for the preparation of emulsion polymers having a solid content of about 65% to about 80% which comprises adding a monomeric mixture to a reaction system maintained at a temperature of from about 60° C. to about 90° C., said monomer addition not exceeding an hourly rate of about one-fourth of the total monomer to be added, said mixture comprising monomers having a particle size of from about 10–100 microns, said system having therein an emulsifier and initiator at the time of said monomeric addition.

4,418,184

PROCESS FOR PREPARATION OF ETHYLENE POLYMER WAX

Takashi Ueda, Ohtake, and Norio Kashiwa, Iwakuni, both of Japan, assignors to Mitsui Petrochemical Industries, Ltd., Tokyo, Japan

Continuation of Ser. No. 157,009, Jun. 6, 1980, abandoned. This application Mar. 22, 1982, Ser. No. 360,440

Claims priority, application Japan, Jun. 11, 1979, 54-72221

Int. Cl.³ C08F *2/40, 10/02*

U.S. Cl. 526—125 **14 Claims**

1. In a process for preparing an ethylene polymer wax which comprises polymerizing ethylene or copolymerizing ethylene with up to 10 mole% of an alpha-olefin having 3 to 30 carbon atoms in an inert hydrocarbon solvent at a temperature of about 140° C. to about 300° C. and a pressure of about 5 to about 200 kg/cm^2.G in the presence of hydrogen and a catalyst composed of (A) a highly active titanium catalyst component activated by a magnesium compound and obtained by copulverizing an inorganic magnesium compound selected from the group consisting of magnesium chloride, magnesium bromide, magnesium iodide, magnesium fluoride, magnesium hydroxide, magnesium oxide and magnesium hydroxyhalides and a titanium compound, or by reacting said inorganic magnesium compound which has been treated with an electron donor with a titanium compound and (B) an organoaluminum catalyst component; the improvement wherein

(i) said organoaluminum catalyst component is composed of

(B-1) an organoaluminum compound free from halogen bonded directly to the aluminum atom selected from the group consisting of trialkyl aluminums having a C_1–C_{15} alkyl group and alkyl aluminum hydrides having C_1–C_{15} alkyl group and

(B-2) a halogen compound selected from the group consisting of aluminum trihalides, halogen compounds of aluminum having a C_1–C_{15} alkyl group, halogen compounds of aluminum having a C_1–C_{15} alkoxy group, halogen compounds of C_1–C_{20} aliphatic hydrocarbon, halogen compounds of a C_6–C_{20} aromatic hydrocarbon, tetrahalosilanes halogen compounds of silicon having a C_1–C_{12} alkyl group and halogen compounds of silicon having a C_1–C_{12} alkoxy group the atomic ratio of halogen to aluminum in the organoaluminum catalyst component (B) being from about 1:6 to about 9:10, provided that when said halogen compound is a halogen compound of carbon, this atomic ratio is from about 1:6 to about 10:1, and

(ii) said polymerization or copolymerization is carried out under such conditions that the concentration of ethylene polymer wax in the polymerization or copolymerization system is about 200 to about 600 g/liter of solvent, to form a wax having a viscosity average molecular weight of up to about 6000.

4,418,185

PROCESS FOR NONAQUEOUS DISPERSION POLYMERIZATION OF BUTADIENE IN THE PRESENCE OF HIGH CIS-1,4-POLYISOPRENE AS A POLYMERIC DISPERSING AGENT

Morford C. Throckmorton, Akron, and Paul H. Sandstrom, Tallmadge, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 20, 1982, Ser. No. 419,649
Int. Cl.³ C08F 2/08
U.S. Cl. 526—201 10 Claims

1. A process for the nonaqueous dispersion polymerization of butadiene monomer in a reaction mixture containing a liquid nonaqueous dispersion medium, the improvement which comprises carrying out the polymerization of the butadiene monomer in the presence of high cis-1,4-polyisoprene to produce very high cis-1,4-polybutadiene.

4,418,186

COPOLYMER FOR FLUORINE-CONTAINING ELASTOMER HAVING EXCELLENT LOW TEMPERATURE RESISTANCE AND ALCOHOL RESISTANCE

Masaaki Yamabe; Gen Kojima, both of Machida; Hiroshi Wachi, and Shun-ichi Kodama, both of Yokohama, all of Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Dec. 7, 1981, Ser. No. 328,387
Claims priority, application Japan, Dec. 26, 1980, 55-183780
Int. Cl.³ C08F 214/16, 214/18, 214/22
U.S. Cl. 526—247 4 Claims

1. A copolymer for a fluorine-containing elastomer having excellent low temperature resistance and alcohol resistance which comprises vinylidene fluoride units and fluorovinyl ether units having the formula CF_2=CFOX, wherein x is a C_3–C_9 perfluoralkyl group which has an ether bond or bonds having 1–3 oxygen atoms, at a molar ratio of said vinylidene fluoride units to said fluorovinyl ether units of 90:10 to 60:40 and at a total content of the units of at least 80 mole %; and perfluoro(2-bromoethyl vinyl ether) units at 0.1 to 5 mole %, based on the total copolymer.

3. A copolymer for a fluorine-containing elastomer having excellent low temperature resistance and alcohol resistance which comprises vinylidene fluoride units and perfluoro(2-n-propoxypropyl vinyl ether) units, at a molar ratio of said vinylidene fluoride units to said perfluoro(2-n-propoxypropyl vinyl ether) units of 90:10 to 60:40 and at a total content of the units of at least 80 mole %, and perfluoro(propylvinyl ether) units, of 15 mole % or less, based on the total copolymer.

4. The copolymer according to claim 3, which further comprises perfluoro(2-bromoethyl vinyl ether) units at 0.1 to 5 mole %, based on the total copolymer.

4,418,187

PREPARATION OF ELECTRICALLY CONDUCTIVE POLYMERS

Volker Muench, Ludwigshafen; Herbert Naarmann, Wattenheim, and Klaus Penzien, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Apr. 15, 1981, Ser. No. 254,258
Claims priority, application Fed. Rep. of Germany, May 14, 1980, 3018389
Int. Cl.³ C08F 112/32, 126/00, 126/06, 126/12
U.S. Cl. 526—259 5 Claims

1. A process for the preparation of electrically conductive compositions which comprises polymerizing acenaphthylene, N-vinylcarbazole, N-vinylpyridene or N,N-divinylaniline at temperatures of from −80° to 100° C. using, as the catalyst, an oxidizing Lewis acid in an amount of from 10 to 50% by weight, based on the weight of the monomer employed.

4,418,188

POLYETHYLENE ISOPHTHALATE HAVING REDUCED CYCLIC DIMER CONTENT AND PROCESS THEREFORE

Richard R. Smith, Cuyahoga Falls, and Mellis M. Kelley, Akron, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 7, 1982, Ser. No. 415,212
Int. Cl.³ C08G 63/04, 63/22, 63/54
U.S. Cl. 528—274 30 Claims

1. A process for making a polyester having low cyclic dimer content, comprising:

providing a quantity of one or more dicarboxylic compounds selected from the group consisting of a dicarboxylic acid or alkyl ester thereof having from 4 to 40 carbon atoms and combinations thereof;

providing a quantity of one or more glycols selected from the group consisting of ethylene glycol, glycols having from 3 to 12 carbon atoms, glycol ethers having from 4 to 12 carbon atoms, and combinations thereof;

providing a protonic acid catalyst; and

reacting said dicarboxylic acid and said glycol compounds in the presence of said protonic acid catalyst to form the polyester;

wherein at least 50 mole percent of said dicarboxylic quantity is selected from the group consisting of isophthalic acid and alkyl esters thereof having from 10 to 20 carbon atoms;

wherein at least 50 mole percent of said glycol quantity is ethylene glycol; and

wherein said polyester has an ethylene isophthalate cyclic dimer content of 5 weight percent or less.

14. A polyester having low cyclic dimer content, comprising:

the reaction product of:

a quantity of one or more dicarboxylic compounds selected from the group consisting of a dicarboxylic acid or alkyl ester thereof having from 4 to 40 carbon atoms and combinations thereof;

a quantity of one or more glycols selected from the group consisting of glycols having from 2 to 12 carbon atoms, glycol ethers having from 4 to 12 carbon atoms, and combinations thereof; and

a protonic acid catalyst;

wherein at least 50 mole percent of said dicarboxylic quantity is selected from the group consisting of isophthalic acid and alkyl esters thereof having from 10 to 20 carbon atoms;

wherein at least 50 mole percent of said glycol quantity is ethylene glycol; and

wherein said polyester has an ethyleneisophthalate cyclic dimer content of 5 weight percent or less.

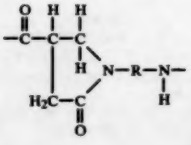
4,418,189

POLYAMIDES FROM ITACONIC ACID AND DIAMINES

Edwin F. Morello, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Filed Dec. 1, 1980, Ser. No. 211,587
Int. Cl.³ C08G 69/26
U.S. Cl. 528—345 20 Claims

1. A molded object comprising a polyamide having the recurring structure:



wherein R is a divalent aliphatic or aromatic hydrocarbon radical.

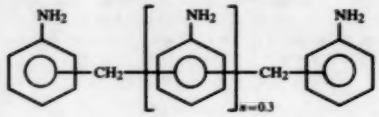
4,418,190

DIELECTRIC FILMS FROM WATER SOLUBLE POLYIMIDES

Robert M. Bishop; Lionel J. Payette, both of Fort Wayne, Ind., and Roscoe A. Pike, Simsbury, Conn., assignors to Essex Group, Inc., Fort Wayne, Ind.

Filed Apr. 9, 1982, Ser. No. 367,189
Int. Cl.³ C08G 73/10
U.S. Cl. 528—353 **3 Claims**

1. An electrically insulating polymeric film comprising the reaction product of 1, 2, 3, 4 butane tetracarboxylic acid, a multifunctional amine of the formula:



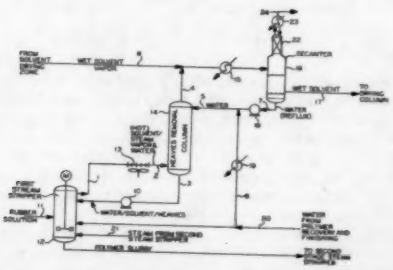
and at least one diamine, the multifunctional amine constituting at least 5% of the total amine equivalents of the reactants, said film having a tensile strength greater than 12 psi$\times 10^3$ at temperatures up to about 125° C., a tensile modulus greater than 0.3 psi$\times 10^6$ at temperatures up to about 125° C., a percent elongation of at least 8% at temperatures up to about 125° C., insulation resistance at 125° C. of at least 33$\times 10^{11}$ ohms/mil at 500 volts DC and 29$\times 10^{11}$ ohms/mil at 1000 volts DC, and a dielectric breakdown strength of at least 3300 volts/mil at a rate of increase of 500 volts AC/sec.

4,418,191

SOLVENT PURIFICATION

Howard B. Irvin, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 29, 1981, Ser. No. 306,801
Int. Cl.³ C08F 6/16
U.S. Cl. 528—500 **5 Claims**



1. A process for lowering the energy requirement for a polymer recovery and solvent purification operation which comprises the steps of:

(a) introducing a polymer reaction product comprising polymer, solvent, and material less volatile than said solvent into a stripping column;

(b) introducing steam into said stripping column thereby producing a stripped overhead comprising steam, vaporized solvent and material less volatile than said solvent;

(c) passing said steam stripped overhead as the heat supply into a fractionating column supplied with water reflux;

(d) recovering wet solvent vapor as fractionated overhead from said fractionation column;

(e) returning a stream comprising water, solvent, and materials less volatile than said solvent from the fractionation column base as reflux into said stripping column; and

(f) recovering steam stripped polymer slurry from the base of said stripping column.

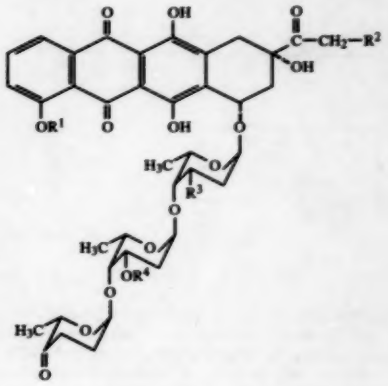
4,418,192

ANTHRACYCLINONE TRISACCHARIDE COMPOUNDS

Hiroshi Tanaka, Fujisawa; Takeo Yoshioka, Ayase; Yasutaka Shimauchi, Ninomiya; Toshikazu Oki, Yokohama; Tomoyuki Ishikura, Chigasaki; Tomio Takeuchi, and Hamao Umezawa, both of Tokyo, all of Japan, assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan

Filed Apr. 20, 1982, Ser. No. 370,212
Claims priority, application Japan, Apr. 23, 1981, 56-61766
Int. Cl.³ A61K 31/71; C07H 15/24
U.S. Cl. 536—6.4 **7 Claims**

1. Novel anthracyclinone glycosides represented by the chemical formula:



(I)

wherein

R^1 is hydrogen or methyl;

R^2 is hydrogen, hydroxyl or —OCOX (wherein X is lower alkyl or aralkyl);

R^3 is amino, monomethylamino or dimethylamino; and

R^4 is hydrogen or acetyl;

and their acid addition salts.

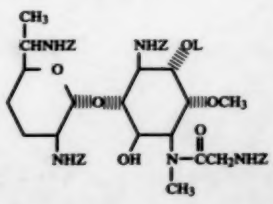
4,418,193

METHOD OF PRODUCING 2-EPI-FORTIMICIN A

James B. McAlpine, Libertyville, and Ronald E. Carney, Gurnee, both of Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 9, 1982, Ser. No. 366,800
Int. Cl.³ C07H 15/22
U.S. Cl. 536—16.1 **12 Claims**

1. An improved method of producing 2-epi-fortimicin A, comprising (a) converting an N-protected fortimicin A compound to an intermediate (I) of the formula:



(I)

wherein L is a leaving group and Z is an amine protecting

group; (b) reacting the intermediate (I) with a loweralkyl metal halide in the presence of N,N-dimethylformamide to produce N-protected-2-epi-fortimicin A; and (c) subjecting the N-protected-2-epi-fortimicin A to catalytic hydrogenolysis to obtain 2-epi-fortimicin A.

4,418,194

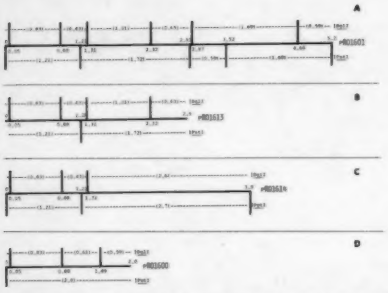
DNA FRAGMENTS FOR FORMING PLASMIDS

Ronald H. Olsen, Ann Arbor, Mich., assignor to Microlife Technics, Inc., Sarasota, Fla.

Division of Ser. No. 147,563, May 8, 1980. This application Oct. 19, 1981, Ser. No. 312,515

Int. Cl.³ C07N *15/12;* **C12P** *21/00, 21/02, 19/34;* **C12N** *15/00, 1/20, 1/00*

U.S. Cl. 536—27 **3 Claims**



1. A deoxyribonucleic acid fragment for forming plasmids, the fragment being formed from a first plasmid originally derived from a plasmid aggregation with plasmid RPl, the fragment measuring about 2×10^6 daltons or less in molecular size, wherein the fragment is from pRO1600 as carried on *Pseudomonas aeruginosa* NRRL-B-12124 and includes a critical restriction endonuclease BglI digestion fragment from pRO1600 which is indispensable for replication in a plasmid.

4,418,195

SILICON-CONTAINING QUATERNARY AMMONIUM THIAZINES

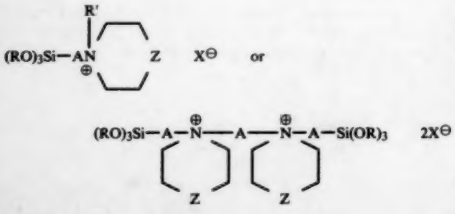
Patrick M. Quinlan, Webster Groves, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

Filed Jul. 11, 1977, Ser. No. 814,513

Int. Cl.³ C07F *7/18;* **A61K** *31/695*

U.S. Cl. 544—58.2 **5 Claims**

1. A compound of the formula



where

R and R' are alkyl, aryl, aralkyl and cycloalkyl;

Z is S, SO, SO_2;

A is alkylene; and

X is an anion.

4,418,196

PROCESS FOR PREPARING TRIACETONE AMINE

Yutaka Nakahara, Iwatsuki; Naohiro Kubota, Ageo; Bunji Hirai, Kuki, and Tohru Haruna, Okegawa, all of Japan, assignors to Adeka Argus Chemical Co., Ltd., Urawa, Japan

Filed Aug. 23, 1982, Ser. No. 410,239

Claims priority, application Japan, Sep. 16, 1981, 56-145771

Int. Cl.³ C07D *211/74*

U.S. Cl. 546—242 **16 Claims**

1. A process for the preparation of triacetone amine, which comprises reacting an acetone compound with ammonia at a temperature at which the reaction proceeds in the presence of a catalytically effective amount of a compound selected from the group consisting of organotin halides, 1,3,5,2,4,6-triazatriphosphorin hexahalides, and cyanuric halides until triacetone amine is formed, and then separating triacetone amine from the reaction mixture.

4,418,197

1,4-DIHYDROPYRIDINE DERIVATIVES

Masato Kamibayashi, Hasuda; Shinji Tsuchiya, Washimiya; Kozo Hiratsuka, Tsurugashima, and Susumu Tsuchiya, Tanashi, all of Japan, assignors to Tokyo Tanabe Company, Limited, Japan

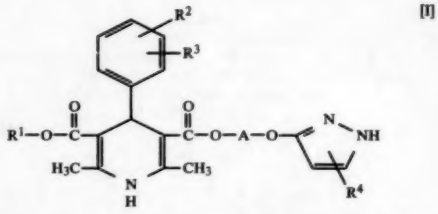
Filed Jan. 13, 1983, Ser. No. 457,867

Claims priority, application Japan, Feb. 1, 1982, 57-13398

Int. Cl.³ C07D *401/14, 401/12*

U.S. Cl. 546—256 **18 Claims**

1. A 1,4-dihydropyridine derivative of the following general formula [I]:



wherein R^1 represents an alkyl group having from 1 to 4 carbon atoms or an alkoxyalkyl group having from 3 to 6 carbon atoms, R^2 represents a hydrogen atom or a halogen atom, R^3 represents either a nitro group when R^2 is a hydrogen atom or a halogen atom when R^2 is a halogen atom, R^4 represents a pyridyl group, a phenethyl group, a benzyl group which may optionally be substituted by at least one member selected from the group consisting of a lower alkyl group, a lower alkoxy group, a methylenedioxy group and a halogen atom or a phenyl group which may optionally be substituted by at least one member selected from the group consisting of a lower alkyl group, a lower alkoxy group, a trifluoromethyl group, a nitro group, a cyano group, an amino group, a mono-loweralkylamino group, a di-loweralkylamino group, an acetylamino group, a benzoylamino group, a methylenedioxy group and a halogen atom, and A represents a hexamethylene group which may optionally be substituted by one or two alkyl groups having from 1 to 3 carbon atoms.

4,418,198

SUBSTITUTED PYRIDINE CARBONYL AMINO ETHYL ESTERS OF 2-METHYL-2-PROPENOIC ACID

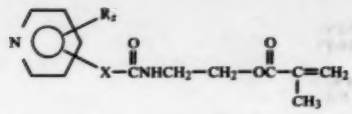
Chester E. Pawloski, Bay City, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Nov. 16, 1981, Ser. No. 321,356

Int. Cl.³ C07D *213/64, 213/68*

U.S. Cl. 546—292 **17 Claims**

1. A compound corresponding to the formula:



wherein X is oxygen, sulfur, imino (—NH—) or oxyalkyloxy of one to four carbon atoms both inclusive; each R independently represents halo, alkyl of one to four carbon atoms both inclusive, alkyloxy of one to four carbon atoms both inclusive, alkylthio of one to four carbon atoms both inclusive, nitro or cyano; and z is an integer of from zero to four, both inclusive, provided that when X is imino (—NH—) z is not zero and further provided that when X is imino and z is the integer one, R is a substituent other than alkyl of one to four carbon atoms.

4,418,199

TRICYCLIC IMIDYL DERIVATIVES

Hans Zweifel, Basel; Walter Schilling, Himmelried; Angelo Storni, Rheinfelden, and Daniel Bellus, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

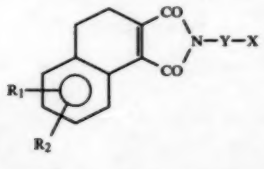
Division of Ser. No. 183,905, Sep. 4, 1980, Pat. No. 4,337,200, which is a continuation-in-part of Ser. No. 9,985, Feb. 6, 1979, Pat. No. 4,242,264. This application Feb. 16, 1982, Ser. No. 349,120

Claims priority, application Switzerland, Feb. 8, 1978, 1400/78

Int. Cl.³ C07D *209/66*

U.S. Cl. 548—451 **5 Claims**

1. A compound of the formula



in which R and R_1 independently of one another are hydrogen, halogen, alkyl having 1 to 4 carbon atoms or methoxy, Y is alkylene having 1 to 30 carbon atoms, cycloalkylene having 5 or 6 carbon atoms, methylenebis(cyclohexylene), arylene having 6 to 10 carbon atoms, aralkylene having 7 or 8 carbon atoms or alkylarylene having 7 or 8 carbon atoms; or said arylene substituted by one alkyl of 1 to 4 carbon atoms, by one alkoxy of 1 to 4 carbon atoms or by one nitro, and X is —COOH or —COCl.

4,418,200

TRICYCLIC IMIDYL DERIVATIVES

Hans Zweifel, Basel; Walter Schilling, Himmelried; Angelo Storni, Rheinfelden, and Daniel Bellus, Riehen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

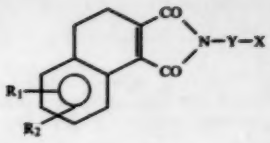
Division of Ser. No. 183,905, Sep. 4, 1980, Pat. No. 4,337,200, which is a continuation-in-part of Ser. No. 9,985, Feb. 6, 1979, Pat. No. 4,242,264. This application Feb. 16, 1982, Ser. No. 349,418

Claims priority, application Switzerland, Feb. 8, 1978, 1400/78

Int. Cl.³ C07D *209/66*

U.S. Cl. 548—451 **5 Claims**

1. A compound of the formula



in which R and R_1 independently of one another are hydrogen, halogen, alkyl having 1 to 4 carbon atoms or methoxy, Y is alkylene having 2 to 30 carbon atoms, cycloalkylene having 5 or 6 carbon atoms, methylenebis(cyclohexylene), arylene having 6 to 10 carbon atoms, aralkylene having 7 or 8 carbon atoms or alkylarylene having 7 or 8 carbon atoms; or said arylene substituted by one alkyl of 1 to 4 carbon atoms, by one alkoxy of 1 to 4 carbon atoms or by one nitro, and X is —OH.

4,418,201

PROCESS FOR PREPARATION OF N-HETEROCYCLIC COMPOUNDS

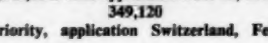
Billy M. Williams, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed May 16, 1980, Ser. No. 150,500

Int. Cl.³ C07D *207/06*

U.S. Cl. 548—579 **10 Claims**

1. A liquid phase process for forming saturated heterocyclic compounds of the formula



wherein R and R' independently in each occurrence are selected from the group consisting of hydrogen, phenyl and $C_{1\text{-}20}$ alkyl, alkoxy or polyalkoxy, and x is an integer from 1 to 4 comprising heating a diamino-substituted aliphatic compound of the formula

wherein R, R' and x are as above-defined and R'' is selected from the group consisting of hydrogen, phenyl and $C_{1\text{-}20}$ alkyl, alkoxy or polyalkoxy in the presence of a catalytically effective amount of a halide-containing Lewis acid at a temperature sufficient to cause formation of the saturated heterocyclic reaction product.

4,418,202

2-VINYL- AND 2-ETHYLCYCLOPROPANE MONOCARBOXYLATES

Richard G. Fayter, Jr., Fairfield, and Allen L. Hall, Amelia, both of Ohio, assignors to Emery Industries, Inc., Cincinnati, Ohio

Filed Dec. 21, 1981, Ser. No. 333,213

Int. Cl.³ C07D *307/16*; C07C *69/74, 121/46, 121/75*

U.S. Cl. 549—496 **14 Claims**

1. A compound of the formula

wherein R is an ethyl or vinyl group, Y is selected from the group consisting of nitrile or aryl, R_1 is hydrogen, a hydrocarbon radical having from 1 to 30 carbon atoms or an aliphatic, cycloaliphatic or aromatic group having from 1 to 30 carbon atoms and one or more oxygen, sulfur, nitrogen or halogen

atoms, with the proviso that when Y is nitrile R_1 cannot be hydrogen or an alkyl group having fewer than 5 carbon atoms.

4,418,203

PROCESS FOR THE EPOXIDATION OF OLEFINS

Leo Kim, Alamo, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 21, 1981, Ser. No. 332,425
Int. Cl.³ C07D 301/12
U.S. Cl. 549—531 5 Claims

1. In the process for the production of epoxides by contacting a substituted or unsubstituted phenylallyl ether with hydrogen peroxide in an organic solvent in the presence of homogeneous transition metal catalyst selected from the group consisting of molybdenum, tungsten and rhenium and a homogeneous organo metallic co-catalyst selected from the group consisting of organo tin, organo arsenic, organo antimony and organo germanium, the improvement which comprises using as the organic solvent a fluorinated alcohol having the formula $CF_3(CF_2)_nCH_2OH$ where n ranges from 0 to about 10.

4,418,204

METHOD FOR MAKING ESTERS

Peter J. Arndt, Seeheim-Jugenheim; Joachim Lowitz, Alsbach-Haehnlein; Manfred Müller, Rossdorf, and Fritz Schlosser, Darmstadt-Kranichstein, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 422,253
Claims priority, application Fed. Rep. of Germany, Oct. 14, 1981, 3140764
Int. Cl.³ C07D 301/00
U.S. Cl. 549—539 5 Claims

1. A method for making an ester of a carboxylic acid with an alcohol containing an epoxy group by the transesterification of another ester of said carboxylic acid with said epoxy alcohol in the presence of 1,4-diazabicyclo(2,2,2)octane as a transesterification catalyst.

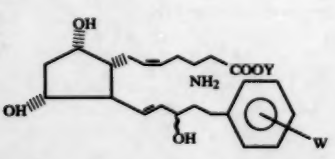
4,418,205

16-AMINO-18,19,20-TRINOR-PROSTAGLANDIN DERIVATIVES, AND ACID ADDITION SALTS

Eva Toth-Sarudy; Gabor Ambrus; György Cseh; Janos Borvendeg; Imre Moravcsik, and Gabriella Mezei, all of Budapest, Hungary, assignors to Patentbureau Danubia, Budapest, Hungary

Filed Dec. 9, 1981, Ser. No. 329,039
Claims priority, application Hungary, Dec. 9, 1980, 2941/80
Int. Cl.³ C07C 177/00
U.S. Cl. 560—39 11 Claims

1. 16-Amino-18,19,20-trinor-prostaglandin derivatives of general formula I



having at C-17 a substituted or unsubstituted phenyl group, wherein C-15 and C-16 may have either S or R configuration, Y stands for a hydrogen atom or a lower alkyl group, W for a hydrogen atom, halogen atom, hydroxy group, lower alkyl or alkoxy group, and their acid addition salts.

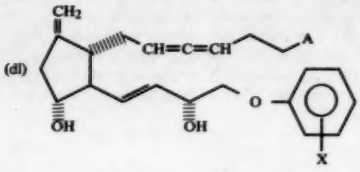
4,418,206

9-DEOXY-9-METHYLENE DERIVATIVES OF (DL)-16-PHENOXY AND 16-PHENOXY SUBSTITUTED PROSTATRIENE COMPOUNDS

Douglas L. Wren, Palo Alto, Calif., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Filed Mar. 22, 1982, Ser. No. 360,286
Int. Cl.³ C07C 177/00
U.S. Cl. 560—55 19 Claims

1. A compound selected from the group of those represented by the following Formula:



I

wherein A is CHOH, CHO or COOR wherein R is hydrogen, a lower alkyl group of 1 to 4 carbon atoms or the pharmaceutically acceptable, non-toxic salts of compounds in which R is hydrogen; and X is hydrogen, o-, m- or p-halo (fluoro, chloro or bromo), o-, m- or p-methyl or o-, m- or p-methoxy.

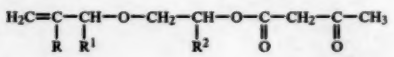
4,418,207

ACETYLACETOXYALKYL-ALLYL ETHERS

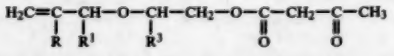
Helmut Braun, Kriftel; Helmut Rinno, Hofheim am Taunus, and Karl J. Rauterkus, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Jul. 9, 1980, Ser. No. 167,004
Claims priority, application Fed. Rep. of Germany, Jul. 11, 1979, 2927933
Int. Cl.³ C07C 69/72
U.S. Cl. 560—178 9 Claims

1. Acetylacetoxyalkyl-allyl ether of formula (I)



or of formula (II)



or mixtures thereof, in which R is a hydrogen atom or a methyl group, R^1 is a hydrogen atom or an alkyl group having 1, 2 or 3 carbon atoms, R^2 is a hydrogen atom, an aryl group having 6 to 8 carbon atoms, or an alkyl group having 1, 2 or 3 carbon atoms unsubstituted or substituted by a halogen atom, a hydroxyl group, or an acyloxy group having from 3 to 6 carbon atoms, and R^3 is an aryl group having 6 to 8 carbon atoms, or an alkyl group having 1, 2 or 3 carbon atoms unsubstituted or substituted by a halogen atom, a hydroxyl group or an acyloxy group having from 3 to 6 carbon atoms.

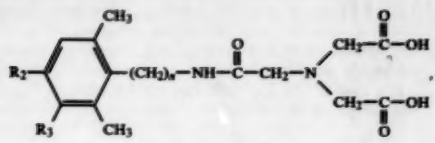
4,418,208

N-SUBSTITUTED IMINODIACETIC ACIDS

Adrian Nunn, Hopewell, and Michael Loberg, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation of Ser. No. 221,155, Dec. 29, 1980, abandoned.
This application Jun. 16, 1982, Ser. No. 388,795
Int. Cl.³ C07C 101/20; A61K 49/00
U.S. Cl. 562—449 9 Claims

1. A compound having the formula



or a pharmaceutically acceptable, water soluble salt thereof, wherein one of R_2 and R_3 is methyl and the other is bromine and n is 0, 1 or 2.

4,418,209

AMIDINOTHIOUREAS

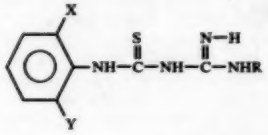
George H. Douglas, Malvern, Pa.; Julius Diamond, Morris Plains, N.J.; William L. Studt, Harleysville, and Stuart A. Dodson, Lansdale, both of Pa., assignors to William H. Rorer, Inc., Fort Washington, Pa.

Continuation of Ser. No. 140,135, Apr. 14, 1980, abandoned. This application Dec. 21, 1981, Ser. No. 333,169

Int. Cl.³ C07C *157/09*; A61K *31/17*

U.S. Cl. 564—27 **9 Claims**

1. A compound of the formula



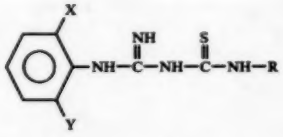
wherein

X and Y may be the same or different and are halo or lower alkyl;

R is lower alkynyl;

or a non-toxic salt thereof.

5.



wherein

X and Y may be the same or different and are halo or lower alkyl;

R is lower alkynyl;

or a non-toxic salt thereof.

4,418,210

PROCESS FOR PRODUCING ASYMMETRICAL THIOUREAS

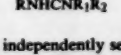
Jeffrey D. Robbins, Berkeley, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Dec. 28, 1981, Ser. No. 334,705

Int. Cl.³ C07C *157/05*

U.S. Cl. 564—24 **3 Claims**

1. A process for preparing asymmetrical thioureas having the formula



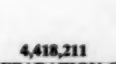
wherein R and R_1 are independently selected from the group of alkyl containing from 1 to 20 carbon atoms and cycloalkyl containing from 1 to 20 carbon atoms, and R_2 is selected from the group consisting of hydrogen, alkyl containing from 1 to 20 carbon atoms and cycloalkyl containing from 1 to 20 carbon atoms and provided that when R_2 is hydrogen, R_1 can not equal R; comprising

(1) forming a reaction of water, an organic solvent, an amine having the formula RNH_2, wherein R is as defined above, a molar excess of a base having the formula MOH wherein $M^{\oplus}$ is a cation selected from the group of $Na^{\oplus}$, $Li^{\oplus}$, $K^{\oplus}$, $Cs^{\oplus}$ and a quaternary ammonium ion having the formula $(R_3)_4N^{\oplus}$ wherein R_3 is a lower alkyl containing from 1 to 4 carbon atoms and CS_2;

(2) reacting said reaction mixture under suitable temperature and pressure conditions to form $RNHCS_2M$, wherein R is as defined above, and H_2O;

(3) forming a second reaction mixture comprising the mixture generated in step (2), an amine having the formula R_1R_2NH wherein R_1 and R_2 are as described above and catalytic amount of MOH, wherein M is as described above; and

(4) reacting said second reaction mixture under suitable temperature and pressure conditions to form said



4,418,211

PREPARATION OF TRANS-CYCLOHEXANE-1,4-DISULPHONYL UREA

Hans Zengel, Kleinwallstadt, and Manfred Bergfeld, Erlenbach, both of Fed. Rep. of Germany, assignors to Akzona Incorporated, Asheville, N.C.

Division of Ser. No. 49,112, Jun. 18, 1979, Pat. No. 4,275,223, which is a division of Ser. No. 883,949, Mar. 6, 1978, Pat. No. 4,203,416. This application Dec. 11, 1980, Ser. No. 215,415

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1977, 2710595

Int. Cl.³ C07C *127/15*

U.S. Cl. 564—40 **1 Claim**

1. A process for making trans-cyclohexane-1,4-disulphonyl urea preferentially to its cis-stereoisomer, which comprises

(a) reacting mixed cis- and trans-cyclohexane-1,4-dicarboxylic acid or an ester thereof with ammonia in a liquid polyhydric alcohol solvent for the acid or ester at a temperature of from about 25° C. to about 200° C. and under an ammonia partial pressure of about 0.1 bar to 50 bars;

(b) separating the resulting solid dicarboxylic acid diamide from the liquid phase including any water soluble constituents therein;

(c) suspending the resulting solid diamide in an aqueous mineral acid or water;

(d) chlorinating the resulting suspended diamide to form cyclohexane-1,4-dicarboxylic acid-bis-N-chloramide, and

(e) reacting said chloramide with a primary sulphonamide in a reaction mixture containing water, dimethyl formamide and an alkali metal hydroxide or alkaline earth metal hydroxide to form substantially exclusively trans-cyclohexane-1,4-disulphonyl urea.

4,418,212
SYNTHESIS OF DIMETHYLMETHYLENE DINITRAMINE

Marguerite S. Chang, Fort Washington, and Robert R. Orndoff, Waldorf, both of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 1, 1982, Ser. No. 394,218
Int. Cl.³ C07C *111/00*
U.S. Cl. 564—109 **17 Claims**

1. A process for preparing methylnitramine comprising the following steps in order:

(1) adding N,N'-dimethylurea on an organic solvent to mixed acid which is maintained at a temperature which is above the freezing point of mixed acid up to 5° C. to produce N,N'-dimethyl-N,N'-dinitrourea and then drowning the mixed acid in ice water;

(2) using an organic solvent to extract the N,N'-dimethyl-N,N'-dinitrourea from the mixed acid-water mixture;

(3) hydrolyzing the N,N'-dimethyl-N,N'-dinitrourea to form methylnitramine by adding the N,N'-dimethyl-N,N'-dinitrourea—organic solvent solution to water which is at a temperature of from 37° C. to 100° C.; and

(4) isolating the product methylnitramine by:

(a) evaporating the organic solvent to completion;

(b) reducing the volume of the water phase by removing water to a minimum until just before methylnitramine begins to decompose;

(c) extracting methylnitramine from the water phase with the organic solvent; and

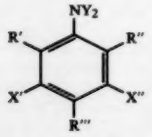
(d) evaporating the organic solvent to obtain methylnitramine.

4,418,213
PROCESS FOR THE SELECTIVE PREPARATION OF META-CHLOROANILINES

Georges Cordier, Francheville, and Pierre Fouilloux, Caluire, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Filed Jul. 14, 1981, Ser. No. 283,151
Claims priority, application France, Aug. 1, 1980, 80 17324; Sep. 26, 1980, 80 20979
Int. Cl.³ C07C *85/11, 85/24*
U.S. Cl. 564—412 **20 Claims**

1. A process for the preparation of anilines substituted in the meta-position by chlorine, by the catalytic hydrogenation, in the liquid phase, under the action of heat and under pressure, in the presence of noble metals from group VIII of the periodic classification, of nitrogen-containing and chlorine-containing benzene derivatives of the formula:



(I)

in which: Y represents the hydrogen atom or the oxygen atom, X' and X'', which are identical to or different from one another, each represent a chlorine atom, or an optionally substituted alkyl, aryl, aralkyl, alkoxy or aralkoxy radical, at least one of the symbols X' and X'' necessarily being a chlorine atom and it being furthermore possible for one of the symbols X' and X'' to be hydrogen, and R', and R'' and R''', which are identical to or different from one another, each represent a chlorine atom or an optionally substituted alkyl, aralkyl, alkoxy or aryloxy radical, at least one of these three symbols representing the chlorine atom and it being furthermore possible for at most two of the symbols R', R'' or R''' to be hydrogen,

in which process the reaction is carried out in an essentially anhydrous medium at between 90° and 300° C., in the presence of a catalytic amount of at least one Lewis acid as a catalyst, wherein the Lewis acid is a halide of an element selected from the group consisting of boron, aluminum, gallium, tin, phosphorus, arsenic, antimony, bismuth, titanium, zirconium, molybdenum, manganese, iron, cobalt, nickel, copper, zinc and cadmium,

wherein the molar ratio of the Lewis acid to the starting nitrogen-containing and chlorine-containing benzene derivative is between 0.0001 and 1.

4,418,214
HYDROGEN RECOVERY BY ALCOHOL SCRUBBING IN ALCOHOL AMINATION

Michael G. Turcotte, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Oct. 18, 1982, Ser. No. 434,768
Int. Cl.³ C07C *85/06*
U.S. Cl. 564—479 **6 Claims**

1. In a process for the preparation of alkylamines which comprises contacting an alkanol feed having at least three carbon atoms with ammonia in the presence of a hydrogenation catalyst and hydrogen in a reaction zone to yield a product effluent stream, and separating the product effluent stream into an alkylamine stream for distillation and a vent stream comprising hydrogen and hydrocarbon by-products, the method comprising

(a) contacting the hydrogen and hydrocarbon by-products vent stream with an alkanol which is the same as the alkanol feed to the reaction zone, to yield a hydrogen gas stream and an alkanol wash stream containing the hydrocarbons,

(b) recycling the hydrogen gas stream to the reaction zone,

(c) stripping the alkanol wash stream to provide a hydrocarbon waste stream and a regenerated alkanol stream, and

(d) recycling the regenerated alkanol stream to the reaction zone.

4,418,215
CATALYSTS

John W. Jenkins, Chalkhouse Green, Near Reading, England, assignor to Johnson, Matthey & Co., Limited, London, England

Division of Ser. No. 214,983, Dec. 10, 1980. This application Nov. 10, 1981, Ser. No. 320,065
Claims priority, application United Kingdom, Dec. 18, 1979, 7943484
Int. Cl.³ C07C *47/052*
U.S. Cl. 568—473 **2 Claims**

1. A process for the oxidative dehydrogenation of methanol to produce formaldehyde which comprises contacting a mixture of methanol and oxygen in which the ratio of methanol to oxygen is above the rich flammability limit with a catalyst or catalyst substrate comprising a metal body wherein said body comprises a silver alloy containing silver and from 0.1 to 7.5% by weight of copper and is made by a melt spin or melt extraction process, said body being in the form of an elongate element.

4,418,216
BIS-TERT.-BUTOXYPENTANALS AND BIS-TERT.-BUTOXYPENTANOLS

Walter Himmele, Walldorf, and Werner Hoffmann, Neuhofen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 167,790, Jul. 11, 1980. This application Feb. 24, 1982, Ser. No. 352,047

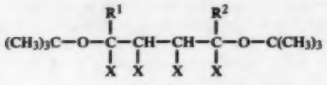
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1979, 2932527

The portion of the term of this patent subsequent to Feb. 24, 1999, has been disclaimed.

Int. Cl.³ C07C *47/198*

U.S. Cl. 568—497 3 Claims

1. A compound having the formula



where R^1 and R^2 are hydrogen or C_1 to C_4-alkyl, one of the radicals X is formyl or hydroxymethyl and the others are hydrogen.

4,418,217
MIXED FORMALS OF POLYGLYCOL ETHERS

Karl Schmid, Mettmann; Margarete Grünert, Kaarst; Jochen Heidrich, and Holger Tesmann, both of Dusseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf-Holthausen, Fed. Rep. of Germany

Filed Apr. 27, 1981, Ser. No. 257,632

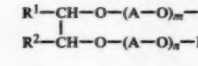
Claims priority, application Fed. Rep. of Germany, May 12, 1980, 3018135

Int. Cl.³ C07C *41/14, 43/11*

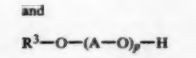
U.S. Cl. 568—593 7 Claims

1. The mixed formal of polyglycol ethers produced by the process consisting essentially of the steps of:

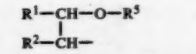
(1) reacting a polyglycol ether having the formulae selected from the group consisting of



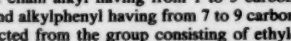
and



wherein R^1 is a straight or branched chain alkyl having from 1 to 18 carbon atoms, and R^2 is selected from the group consisting of hydrogen and straight or branched chain alkyl having from 1 to 17 carbon atoms, where the sum of the carbon atoms in R^1 plus R^2 is from 6 to 18, R^3 is a member selected from the group consisting of monoalkylphenyl having from 14 to 26 carbon atoms, dialkylphenyl having from 14 to 26 carbon atoms, trialkylphenyl having from 14 to 26 carbon atoms, a straight or branched chain alkyl having from 8 to 22 carbon atoms, a straight or branched chain alkenyl having from 8 to 22 carbon atoms, and a radical having the formula



wherein R^1 and R^2 have the above assigned values, and R^5 is selected from the group consisting of a straight or branched chain alkyl having from 1 to 5 carbon atoms, phenyl and alkylphenyl having from 7 to 9 carbon atoms, A is selected from the group consisting of ethylene and isopropylene, m and n are integers from 0 to 50, and p is an integer from 2 to 50, where the sum of m plus n, is from 2 to 50, with a diformal having the formula



wherein R^4 is a straight or branched chain alkyl having from 1 to 5 carbon atoms, B is selected from the group consisting of ethylene and propylene, and q is an integer from 0 to 3, at a temperature of from 60° to 150° C. in the presence of a strong acid, while employing from 2 to 10 mols of said diformal per mol of hydroxyl groups in said polyglycol ether,

(2) distilling off the alcohol formed having the formula

wherein R^4, B and q have the above-assigned values,

(3) neutralizing,

(4) distilling of unreacted diformal, and

(5) recovering said mixed formal of polyglycol ethers, having an OH-number of 6 or less and which is extremely stable in the presence of strong alkalis.

4,418,218
PROCESS FOR PRODUCING DIHYDRONAPHTHALENE DERIVATIVES

Shiro Terashima; Norihiko Tanno, and Kenji Koga, all of Tokyo, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

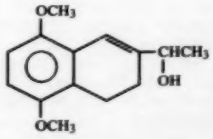
Division of Ser. No. 238,136, Feb. 25, 1981, abandoned. This application Mar. 29, 1982, Ser. No. 363,048

Claims priority, application Japan, Mar. 4, 1980, 55-27673; Jul. 18, 1980, 55-98956

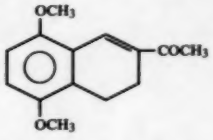
Int. Cl.³ C07C *41/18*

U.S. Cl. 568—633 3 Claims

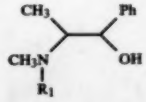
1. A process for producing 2-(1'-hydroxy)ethyl-5,8-dimethoxy-3,4-dihydronaphthalene of the formula,



which comprises reducing 2-acetyl-5,8-dimethoxy-3,4-dihydronaphthalene of the formula,



with the reducing agent obtained by reacting one equivalent of lithium aluminum hydride with one equivalent of an optically active N-substituted ephedrine of the formula



(wherein R_1 is a C_1–C_4 alkyl or benzyl group and Ph is phenyl group)

and two equivalents of an N-substituted aniline of the formula,

(wherein R_2 is a C_1–C_4 straight-chain alkyl or phenyl group and Ph is phenyl group).

4,418,219

PREPARATION OF METHYL TERTIARY-BUTYL ETHER

Ronnie M. Hanes, Milford, and Orville D. Prampton, Wyoming, both of Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 239,249, Mar. 2, 1981, abandoned. This application Mar. 22, 1982, Ser. No. 360,531

Int. Cl.³ C07C *41/06*

U.S. Cl. 568—697 **12 Claims**

1. A process for preparing methyl tertiary-butyl ether which comprises reacting isobutylene and methanol in the presence of a catalytically effective amount of at least one heterogeneous catalyst selected from the group consisting of boron phosphate and blue tungsten oxide at a temperature of from about 50° C. to about 400° C.

4,418,220

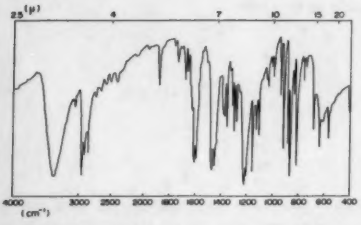
NOVEL INDENE COMPOUND AND NOVEL PROCESS FOR PRODUCING INDENE COMPOUNDS

Satoshi Numata, Yokohama; Kiyoshi Nakatani, Tokyo; Noboro Yamazaki, and Teruo Yuasa, both of Nagoya, all of Japan, assignors to Mitsui Toatsu Chemicals Inc., Tokyo, Japan

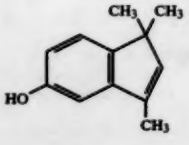
Division of Ser. No. 97,147, Nov. 26, 1979, Pat. No. 4,366,378. This application Mar. 24, 1982, Ser. No. 361,433

Int. Cl.³ C07C *39/14*

U.S. Cl. 568—734 **1 Claim**



1. Novel compound, 5-hydroxy-1,1,3-trimethyl-2-indene, of the formula



(I)

4,418,221

PROCESS FOR TREATING AQUEOUS SOLUTIONS CONTAINING PHENOLS

Sinichi Yasuda, Otsu; Takayuki Kurohara, Hirakata, and Akira Taguro, Osaka, all of Japan, assignors to Koei Chemical Co., Ltd., Osaka, Japan

Filed Mar. 12, 1982, Ser. No. 357,466

Claims priority, application Japan, Mar. 19, 1981, 56-41124

Int. Cl.³ C07C *37/68, 37/84*

U.S. Cl. 568—757 **11 Claims**

1. A process for treating an aqueous solution containing at least one phenol selected from the group consisting of phenol, cresols, xylenols, catechols, chlorophenols and nitrophenols, characterized by removing said phenol from said aqueous solution by extraction using an extracting solvent comprising a nitrogen-containing heterocyclic compound having a total carbon number of 9 or more, selected from the group consisting of a compound having the skeletal structure of pyridine, a compound having the skeletal structure of piperidine and a compound having the skeletal structure of triazine.

4,418,222

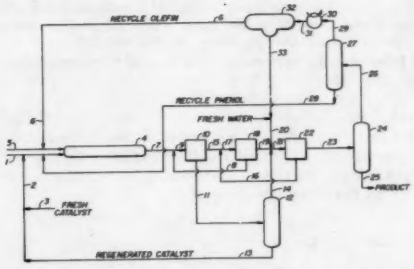
CONTINUOUS PHENOL ALKYLATION PROCESS

Lewis R. Honnen, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 26, 1981, Ser. No. 267,164

Int. Cl.³ C07C *37/14, 39/06*

U.S. Cl. 568—793 **3 Claims**



1. An improved process for the continuous production of para monoalkyl phenol comprising reacting phenol with polypropylene under liquid phase alkylation conditions by contacting the reactants in the presence of an effective amount of trifluormethanesulfonic acid catalyst, said contacting being at a temperature in the range of from about 20° C. to 150° C. for a period of from 0.5 to 10 minutes which time is sufficient for substantial completion of said alkylation and insufficient for appreciable isomerization of said para alkyl phenol; quenching the resulting alkylation reaction mixture and producing an aqueous phase containing said catalyst and an organic phase containing said para alkyl phenol by introducing water into said mixture; and recovering said alkyl phenol from said organic phase.

4,418,223

PREPARATION OF 2,4,6-TRIALKYLPHENOLS

Bruce E. Firth, Elk Grove, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 29, 1982, Ser. No. 362,774

Int. Cl.³ C07C *37/14, 39/06*

U.S. Cl. 568—794 **6 Claims**

1. A method of preparing 2,4,6-tri-sec-alkylphenol comprising reacting phenol with a monosubstituted or alpha, beta-disubstituted olefin at a temperature from about 150° to about 300° C. in the presence of a catalyst which is a composite consisting essentially of silica and alumina containing from

about 40 to about 60% silica and from about 60 to about 40% alumina, and recovering the 2,4,6-tri-sec-alkylphenol.

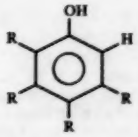
4,418,224

PREPARATION OF ORTHO-ALKYLATED PHENOLS USING MAGNESIUM COMPOUND CATALYSTS

James G. Bennett, Delmar, N.Y., and Freddie L. Tungate, Georgetown, Ind., assignors to General Electric Company, Pittsfield, Mass.

Filed Sep. 18, 1981, Ser. No. 303,567
Int. Cl.³ C07C 37/16
U.S. Cl. 568—804 24 Claims

1. In a process for alkylating a phenolic compound in the ortho position which comprises the vapor phase reaction in the presence of an alkylation catalyst of an alkylation feed mixture comprising an alkyl alcohol having up to about 16 carbon atoms and a phenolic compound having at least one ortho hydrogen, the phenolic compound represented by the formula



wherein R is a monovalent substituent selected from the group consisting of hydrogen, alkyl, phenyl and alkyl substituted phenyl, the improvement comprising conducting the reaction in the presence of a catalyst consisting of a calcination residue derived from heating a magnesium-containing compound wherein said heating which provides a calcination residue takes place in the presence of said alkylation feed mixture in situ in a reactor.

4,418,225

RESOLUTION OF D,l-MENTHOL

David W. House, Arlington Heights, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Jan. 8, 1982, Ser. No. 338,443
Int. Cl.³ C07C 35/12
U.S. Cl. 568—829 14 Claims

1. A method of preparing optically active menthol comprising contacting a solution containing the diastereomeric esters from racemic menthol and an optically active amino acid selected from the group consisting of naturally occurring amino acids, phenylglycine, 4-hydroxyphenylglycine, meta-tyrosine, 3,4-dihydroxyalanine, and 3,5-diiodothyronine with a chromatographic support, eluting said support with a solvent under chromatographic conditions, collecting at least one effluent fraction containing a purified diastereomer, treating the purified diastereomer to liberate optically active menthol, and recovering said optically active menthol.

11. A method of obtaining a purified diastereomer from which l-menthol may be readily regenerated comprising contacting a solution containing the diastereomeric esters from racemic menthol and an optically active amino acid selected from the group consisting of naturally occurring amino acids, phenylglycine, 4-hydroxyphenylglycine, meta-tyrosine, 3,4-dihydroxyalanine, and 3,5-diiodothyronine, with a chromatographic support, eluting said support with a solvent under chromatographic conditions, and collecting at least one effluent fraction containing a purified diastereomer of l-menthol and said amino acid.

4,418,226

PROCESS FOR REFINING WASTE LIQUOR

Martin J. Jacobs, Terre Haute, Ind., assignor to International Minerals & Chemical Corp., Terre Haute, Ind.

Filed Oct. 4, 1982, Ser. No. 432,602
Int. Cl.³ C07C 31/24, 29/86
U.S. Cl. 568—854 3 Claims

1. A process for the purification of pentaerythritol waste liquor resulting from the process of crystallizing pentaerythritol from the mother liquor containing it, the waste liquor comprising an aqueous solution of pentaerythritol, dipentaerythritol, sodium formate, cyclic pentaerythritol monoformal and bispentaerythritol monoformal comprising the steps of extracting the waste liquor with tetrahydrofuran in a ratio of about 1–4:1 thereby forming an extract containing most of the cyclic pentaerythritol monoformal and bispentaerythritol monoformal and a raffinate containing most of the pentaerythritol, dipentaerythritol and sodium formate and recycling the raffinate to the crystallization process.

4,418,227

IMPROVED PROCESS FOR HYDROGENATING ALDEHYDES AND KETONES BY EMPLOYING ANIONIC GROUP VIII METAL HYDRIDE COMPOSITIONS AS HYDROGENATION CATALYSTS

Guido P. Pez, Boonton, and Roger A. Grey, Denville, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 70,583, Aug. 29, 1979, Pat. No. 4,268,454.
This application Oct. 20, 1980, Ser. No. 200,165
Int. Cl.³ C07C 27/00, 29/00, 31/18
U.S. Cl. 568—861 2 Claims

1. An improved process for hydrogenating an aldehyde group in a chemical compound to a primary alcohol group including contacting a solution of hydrogenation catalyst and said aldehyde, neat or in an inert solvent therefore, with an atmosphere containing hydrogen gas; the improvement which comprises providing an anionic Group VIII metal hydride complex having 1 to 3 ligands per Group VIII metal atom as said catalyst, said ligands being selected from triphenyl phosphine, diphenyl phosphide and methyldiphenylphosphine; wherein the Group VIII metal is an element selected from the first and second transition series; and the charge of the complex anion is neutralized by cations selected from Group IA and Group IIA metals.

4,418,228

PROCESS FOR RING BROMINATION OF NITROBENZENE

James J. Harrison, Glenshaw; John P. Pellegrini, Pittsburgh, and Charles M. Selwitz, Monroeville, all of Pa., assignors to Gulf Research & Development Company, Pittsburgh, Pa.

Filed Apr. 22, 1982, Ser. No. 370,733
Int. Cl.³ C07C 79/12
U.S. Cl. 568—937 6 Claims

1. A process for ring bromination of nitrobenzene which comprises contacting nitrobenzene with an alkali metal bromate and aqueous sulfuric acid, the reaction mixture being such that the amount of nitrobenzene therein will be in the range of about 0.25 to about 2.0 mols per liter of solution, the amount of alkali metal bromate being in the range of about 0.25 to about 2.5 mols per liter of solution and the concentration of the sulfuric acid in the reaction mixture being in the range of about 52 to about 75 weight percent.

4,418,229

METHOD FOR PRODUCING FLUORONITROBENZENE COMPOUNDS

Carl R. White, St. Louis, Mo., assignor to Mallinckrodt, Inc., St. Louis, Mo.

Filed Apr. 15, 1981, Ser. No. 254,357
Int. Cl.³ C07C 79/12
U.S. Cl. 568—938 16 Claims

1. A method for producing a fluoronitrobenzene compound by reacting a corresponding chloronitrobenzene compound with a fluoride salt in an aprotic, polar, organic solvent under halide-exchange conditions, including an elevated reaction temperature of from about 120° C. to about 220° C., in the presence of a catalyzing amount of quaternary ammonium salt phase-transfer catalyst, which comprises adding said phase-transfer catalyst to the reaction mixture incrementally at a rate of from about 0.005 to about 0.1 mole per mole of chloronitrobenzene compound per hour during the course of the reaction.

4,418,230

METHOD FOR GASEOUS PHASE NITRATION OF AROMATICS

Jan Bakke, Hommelvik, and Jermünd Liaskar, Volda, both of Norway, assignors to Aktiebolaget Bofors, Bofors, Sweden

Continuation of Ser. No. 917,449, Jun. 21, 1978, abandoned. This application Jan. 11, 1982, Ser. No. 338,809
Int. Cl.³ C07C 79/10
U.S. Cl. 568—940 13 Claims

1. A method for preparing mononitrololuene through gas phase nitration of toluene, characterized in that gaseous toluene and nitric acid in a mol ratio of toluene/nitric acid of approximately 1.4, together with an inert carrier gas at a temperature of about 150° C. to about 250° C., are conveyed over a catalyst consisting essentially of an acidic silica-alumina zeolite-type catalyst, whereby the catalytic activity to produce mononitrololuene resides essentially in said zeolite-type catalyst.

4,418,231

CORROSION INHIBITED SOLVENT COMPOSITIONS

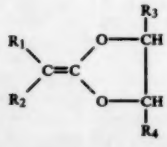
Steven E. Pamer, Rittman, Ohio, assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Aug. 7, 1981, Ser. No. 290,770
Int. Cl.³ C07C 17/42; C23G 5/02
U.S. Cl. 570—115 11 Claims

1. Solvent composition comprising:

a. a member selected from the group consisting of methylchloroform, trichloroethylene and a mixture thereof; and

b. a corrosion inhibiting amount of acid acceptor represented by the structural formula



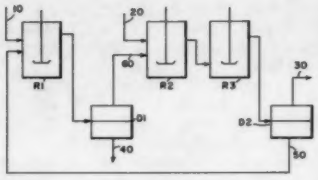
wherein R_1 and R_2 are each independently hydrogen, methyl or ethyl and wherein R_3 and R_4 are each independently hydrogen or alkyl containing from 1 to about 6 carbon atoms.

4,418,232

DEHYDROHALOGENATION PROCESS

Louis J. Maurin, III, Wilmington, Del., assignor to E. I. Du Pont de Nemours & Co., Wilmington, Del.

Filed Nov. 29, 1982, Ser. No. 445,155
Int. Cl.³ C07C 17/34
U.S. Cl. 570—228 8 Claims



1. In a process for dehydrohalogenating a halogenated hydrocarbon to an ethylenically unsaturated product with aqueous alkali in the presence of a phase-transfer catalyst in a series of at least two liquid-full reactors operating in a cascade arrangement,

the improvement of feeding the halogenated hydrocarbon and the catalyst to the first reactor while feeding fresh aqueous alkali to a reactor subsequent to the first, which alkali may be fed together with the organic phase entering that reactor, separating the effluent from the last reactor into a partially spent aqueous alkali solution, which is fed to the first reactor, and an organic phase, from which the ethylenically unsaturated product is recovered; and removing waste brine from the effluent from the reactor immediately preceding the fresh aqueous alkali feedpoint.

4,418,233

REMOVAL OF IMPURITIES FROM VINYL CHLORIDE

Eckehard Danz, Ludwigshafen, and Gerd Krome, Weisenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 13, 1982, Ser. No. 377,970
Claims priority, application Fed. Rep. of Germany, Jun. 4, 1981, 3122181
Int. Cl.³ B01D 15/00
U.S. Cl. 570—239 5 Claims

1. A process for removing hydrogen chloride and water as impurities from vinyl chloride which comprises: passing liquid vinyl chloride over finely divided calcium oxide at a temperature of from 20° to 70° C. whereby the impurities are absorbed on the calcium oxide.

4,418,234

VISCOSITY INDEX IMPROVER SOLUBLE IN SYNTHETIC POLY(α-OLEFIN) LUBRICANTS

Sidney Schiff, and William J. Trepka, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 16, 1981, Ser. No. 331,413
Int. Cl.³ C10M 1/18
U.S. Cl. 585—12 15 Claims

1. Shear-stable, poly(α-olefin) oil-based compositions comprising a major amount of a poly(α-olefin) base oil, and a minor effective viscosity improving amount of a poly(α-olefin) oil-soluble hydrogenated conjugated diene/monovinylarene random copolymer dissolved therein, said random copolymer characterized by:

polymerized conjugated diene content:	about 55–95 weight percent
copolymerized monovinylarene content:	about 5–45 weight percent
molecular weight M_n:	about 30,000 to 200,000

-continued

vinyl unsaturation, normalized:	at least about 25 percent
block polymonovinylarene	less than about 5 percent.

4,418,235

HYDROCARBON CONVERSION WITH ZEOLITE HAVING ENHANCED CATALYTIC ACTIVITY

Werner O. Haag, Lawrenceville, N.J., and Rudolph M. Lago, Yardley, Pa., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 121,339, Feb. 14, 1980, Pat. No. 4,326,994. This application Dec. 30, 1981, Ser. No. 335,958

Int. Cl.³ C07C *15/393, 2/68, 5/22, 2/02*

U.S. Cl. 585—407 **32 Claims**

1. A process for hydrocarbon compound acid catalyzed conversion which comprises contacting a hydrocarbon compound containing feedstock under hydrocarbon conversion conditions with an acid zeolite having a determinable initial activity and characterized by a silica to alumina ratio of at least 12 and a constraint index of about 1 to about 12, and whose activity has been increased by a method comprising contacting said zeolite with water for a sufficient treating time, temperature and water partial pressure wherein said time, temperature and pressure is represented by the following relationship of treating time and water pressure at constant temperatures:

$$0.01\ (Pt)_T < (Pt) < 10(Pt)_T$$

where

$$(Pt)_T = 2.6 \times 10^{-9} e^{16000/T}$$

P=Water Partial Pressure, atmosphere
t—Treating Time, Hours
T=Temperature, °K

4,418,236

METHOD OF PRODUCING GASOLINE HYDROCARBONS FROM METHANOL

Gerhard Cornelius, Karben; Wolfgang Hilsebein, Frankfurt am Main; Helmut Ried, Karben, all of Fed. Rep. of Germany, and Adolf W. Gessner, West Caldwell, N.J., assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 21, 1982, Ser. No. 420,784

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137751

Int. Cl.³ C07C *1/20, 1/22*

U.S. Cl. 585—408 **3 Claims**

1. A method of catalytically converting methanol to a mixture of gasoline hydrocarbons comprising the steps of:

(a) subjecting a methanol-containing gas mixture at pressure of about 5 to 100 bar and a temperature of 250° to 500° C. to catalytic conversion in the presence of a catalyst capable of converting methanol to gasoline hydrocarbons, thereby producing a product gas mixture containing said hydrocarbons and a tail gas;

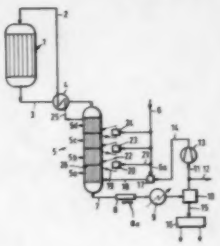
(b) cooling said product gas mixture;

(c) condensing said gasoline hydrocarbons from the cool product gas mixture and separating said tail gas therefrom;

(d) recovering from step (c) at least a portion of separated tail gas at a temperature of substantially 60° to 120° C. and injecting a liquid portion of 10 to 50% of the methanol feed required in step (a) into the recovered tail gas separated in step (c) and at said temperature of substantially 60° to 120° C. to thereby completely evaporate the injected methanol and form a mixture of tail gas and methanol vapor;

(e) heating said mixture of tail gas and methanol vapor by about 10° to 40° C. in indirect heat exchange with said product gas mixture by maintaining the temperature differential between said product gas mixture and the mixture of tail gas and methanol vapor at about 20° to 60° C.;

(f) injecting one further portion of liquid methanol into the heated mixture of tail gas and methanol vapor to fully vaporize the additionally injected methanol therein and produce an enriched mixture further enriched in methanol vapor, and heating said enriched mixture by about 10° to 40° C. in indirect heat exchange with said product gas mixture by maintaining the temperature differential between said product gas mixture and the mixture of tail gas and methanol vapor of about 20° to 60° C.;



(g) repeating step (f) at least once with another portion and finally with the balance of the liquid methanol to produce a final mixture at a temperature of substantially 70° to 150° C. containing all the methanol feed, the quantity of each injected portion of liquid methanol being selected to reduce the temperature of the resulting mixture of tail gas and methanol vapor by substantially 10° C. to substantially 40°; and

(h) heating the final mixture by indirect heat exchange with said product gas to a temperature of 280° to 360° C. and thereupon introducing said final mixture into step (a) to thereby provide the methanol feed for the catalytic conversion.

4,418,237

DEHYDROGENATION OF DEHYDROGENATABLE HYDROCARBONS

Tamotsu Imai, Mount Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 248,731, Mar. 30, 1981, abandoned. This application May 21, 1982, Ser. No. 380,796

Int. Cl.³ C07C *5/333*

U.S. Cl. 585—443 **10 Claims**

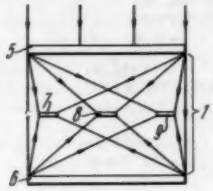
1. A process for the dehydrogenation of a dehydrogenatable hydrocarbon which comprises contacting said dehydrogenatable hydrocarbon with a dehydrogenation catalyst at dehydrogenation conditions in the presence of steam, contacting the resulting mixture of undehydrogenated dehydrogenatable hydrocarbon, resultant dehydrogenated hydrocarbon, hydrogen and steam with an oxygen-containing gas in the presence of an oxidation catalyst comprising a noble metal of Group VIII of the Periodic Table and a metal cation which possesses an ionic radius no less than about 1.35 Angstroms selected from the group consisting of rubidium, cesium, barium, francium and radium composited on a porous alumina support at oxidation conditions to selectively oxidize hydrogen, and recovering said dehydrogenated hydrocarbon.

4,418,238

PHOTOELECTRIC SOLAR CELL ARRAY

Nikolai S. Lidorenko, ulitsa Kibalchicha, 2, kv. 217, Moscow; Viktor V. Afian, ulitsa Sevaka, 2, kv. 13, Erevan; Albert V. Vartanian, Aigestan, 10 ulitsa, 2, kv. 57, Erevan; Ruben G. Martirosian, ulitsa Shinararneri, 27, kv. 32, Ercvan; Stanislav V. Ryabikov, pereulok Vasnetsova, 12, kv. 64, and Dmitry S. Strebkov, Kirovogradsky proezd, 3, korpus 1, kv. 17, both of Moscow, all of U.S.S.R.

Filed Oct. 20, 1981, Ser. No. 313,339
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—246 1 Claim



1. A photoelectric solar cell comprising:

a light dispersing element adapted to be exposed to the sun's radiation and implemented as a hologram, having first and second parts, representing light sources with different wavelengths;

a plurality of photocells, each having different spectral sensitivities and first and second working surfaces with different spectral sensitivites and arranged behind the dispersing element along the path of the sun's radiation, said working surfaces being exposed to the light beams with the wavelengths corresponding to the maximum spectral sensitivities of said photocells, said photocells each being positioned in the image planes of the light sources producing the light beams of the corresponding wavelengths;

wherein said first part of said hologram faces first working surfaces of said photocells and is implemented as a transmission hologram representing light sources which have wavelengths corresponding to the maxima of the spectral sensitivities of said first working surfaces; and said second part of said hologram faces said second working surfaces of said photocells and is implemented as a reflection hologram representing light sources which have wave lengths corresponding to the maxima of the spectral sensitivities of said second working surfaces.

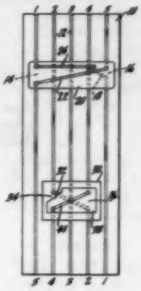
4,418,239

FLEXIBLE CONNECTOR WITH INTERCONNECTION BETWEEN CONDUCTIVE TRACES

Willis A. Larson, and Anthony J. Van Zeeland, both of Crystal Lake, Ill., assignors to Oak Industries Inc., Rancho Bernardo, Calif.

Filed Aug. 24, 1981, Ser. No. 295,528
Int. Cl.³ H01B *7/08*
U.S. Cl. 174—34 10 Claims

1. A flexible connector including a flat thin insulating base, a plurality of spaced conductive paths formed o one side thereof, and means for providing selective interconnection between certain conductive paths including a thin defined insulating patch positioned upon a selective area of said base and conductive paths, and a connecting conductive path on



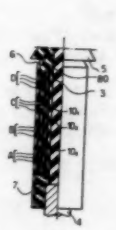
said insulating patch and extending therethrough into electrical contact with said certain conductive paths.

4,418,240

ELECTRICAL STRESS CONTROL ELECTRODE IN COMBINATION WITH A JUNCTION END OF A SHIELDED INSULATED ELECTRICAL CONDUCTOR

Elie Chazelas, Montereau, France, assignor to Societe Industrielle de Liaisons Electriques Silec, Paris, France

Filed Apr. 1, 1981, Ser. No. 249,864
Claims priority, application France, Apr. 2, 1980, 80 07487
Int. Cl.³ H02G *15/064, 15/184*
U.S. Cl. 174—73 R 1 Claim



1. An electrical stress control electrode in combination with a junction end of an elongated shielded and insulated electrical conductor, said electrical stress control electrode being arranged around the periphery of the conductor insulator at the level of the end of the shield of the conductor and comprising:

at least two sheathing members radially separated from each other and each including a plurality of successive adjacent zones in the axial direction;

each zone comprising particles of at least an active material exhibiting variable non-linear electrical resistance properties dispersed in an insulating binder;

said particles being so distributed and size-selected as to progressively increase the electrical resistance of said successive adjacent zones towards one end;

an internal tubular layer of insulating material interposed between the radially innermost sheathing member and said conductor insulator, said layer having a relative permittivity greater than that of said conductor insulator; and

an insulating medium so designed as to separate said sheathing members from each other in a direction perpendicular to said axial direction.

4,418,241

INSULATED COIL

Kenzou Fujiwara, Kobe, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 6, 1982, Ser. No. 337,387

Claims priority, application Japan, Feb. 25, 1981, 56-27236

Int. Cl.³ H01B *7/02;* **H01H** *85/02;* **B32B** *5/16, 7/00*

U.S. Cl. 174—121 SR **9 Claims**

1. An insulated coil formed by a method, comprising:

(a) heat bonding an integrated mica sheet (1) to an aromatic polyamide fibril sheet (2), said integrated mica sheet obtained by forming a mixture of mica flakes and aromatic polyamide fibrils into a sheet and said aromatic polyamide fibril sheet obtained by impregnating an insulating cloth or glass fiber cloth with aromatic polyamide fibrils;

(b) treating the integrated sheet material obtained with a thermosetting resin;

(c) wrapping an electric conductor with the integrated sheet material;

(d) impregnating the wrapped electric conductor with a thermosetting resin under the force of a vacuum or a vacuum-pressure treatment; and

(e) molding the resin impregnated wrapped conductor while heating the same.

4,418,242

COORDINATE READING APPARATUS

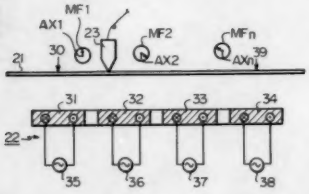
Tsutom Kouno, Machida, Japan, assignor to Fujitsu Limited, Kanagawa, Japan

Filed Feb. 27, 1981, Ser. No. 238,961

Claims priority, application Japan, Mar. 4, 1980, 55/27095; Apr. 15, 1980, 55/49478; Apr. 15, 1980, 55/49479; Dec. 11, 1980, 55/173755

Int. Cl.³ G08C *21/00*

U.S. Cl. 178—19 **15 Claims**



1. A coordinate reading apparatus, comprising;

a tablet including therein magnetic-field generating coils;

a position detector, responsive to magnetic fields induced by said magnetic-field generating coils, for generating an analogue electric signal corresponding to a desired position to be read on said tablet; and

a processing unit, operatively connected to said position detector and said tablet, for receiving said analogue electric signal from said position detector, for generating coordinate data corresponding to said desired position to be read on said tablet, and for supplying alternating signals to said magnetic-field generating coils, the phases of the respective alternating signals in each coil being shifted with respect to each other, each coil having a magnetic field component which when summed with the magnetic field component of an adjacent coil produces a rotating magnetic-field vector, and said position detector sensing the rotating magnetic-field vector which is comprised of the magnetic field components induced above said table, thereby the coordinate data to be read is generated by said processing unit by applying thereto the analogue electric signal representing said rotating magnetic-field vector comprising the magnetic-field components.

4,418,243

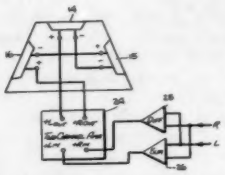
ACOUSTIC PROJECTION STEREOPHONIC SYSTEM

Jon S. Fixler, Andalusia, Pa., assignor to Robert Genin, Miami, Fla.

Filed Feb. 16, 1982, Ser. No. 349,380

Int. Cl.³ H04R *5/02*

U.S. Cl. 381—24 **8 Claims**



1. A system for acoustically projecting sounds into a listening chamber to substantially recreate the three-dimensional ambience of an original sound source composed of a central zone flanked by left and right zones, the sounds emanating from these zones being picked up by at least two microphones one adjacent the left zone and the other adjacent the right zone to produce signals which are conveyed by a stereophonic system in separate signal channels, said system comprising:

A. means coupled to said channels to extract therefrom a first power output derived from the sum of the channel signals; a second power output derived from the difference between the left and right signals, and a third power output derived from the difference between the right and left signals;

B. a reproducer array composed of a middle speaker flanked by left and right speakers;

C. means to apply said first power output to said middle speaker to energize same to project sounds from the front and rear thereof representing the sounds originating at all of said zones;

D. means to apply said second power output to said left speaker to energize same to project sounds from the front and rear thereof representing the difference between the sounds originating at the left and right zone;

E. means to apply said third power output to said right speaker to energize same to project sounds from the front and rear thereof representing the difference between the sounds originating at the right and left zones, and

F a common cabinet including front, back and side walls and an open interior placeable within said listening chamber and having said array of speakers mounted therein in an arrangement in which said middle speaker is mounted on the back wall of the cabinet whereby the sound from the front of this speaker is projected toward the rear of the chamber, said left and right speakers being mounted on the corresponding side walls of the cabinet whereby the respective sounds from the fronts of these speakers are projected toward the corresponding side walls of the

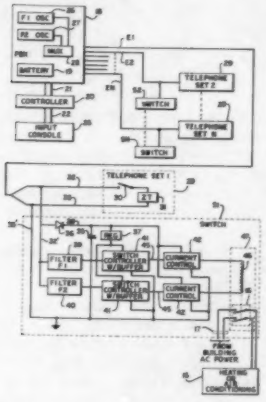
chamber, the front wall of the cabinet being defined by a baffle having a central port therein whereby the sounds from the rear of the speakers in the array are intermixed in the interior of the cabinet, and the resultant sound projected through said port toward the front of the chamber represents sound mainly originating at the central zone of said original sound source.

4,418,244

BISTABLE SWITCH REMOTELY OPERABLE OVER TELEPHONE LINE

C. Mills Edgar, Marietta, Ga., assignor to Solid State Systems, Inc., Marietta, Ga.

Filed Jun. 21, 1982, Ser. No. 390,182
Int. Cl.³ H04M 11/00
U.S. Cl. 179—2 A **6 Claims**



1. A bistable switch for controlling an external load through a pair of telephone conductors comprising in combination:

an input pair of conductors for providing a connection to said pair of telephone conductors;

a passive energy storing means connected between said input pair for storing charge;

a bistable relay including a coil arrangement and a set of contacts characterized by said set of contacts assuming a first state in response to current flowing through said coil arrangement in a set direction and said contacts assuming a second state in response to current flowing said coil arrangement in a reset direction;

current control means including a pair of electronic switches connected to said coil arrangement and to said passive energy storage means, one of said pair being connected to conduct current in said set direction in response to receiving a firing signal, and the other of said pair being connected to said coil arrangement to conduct current in said reset direction, in response to receiving said firing signal;

a pair of switch controllers, each connected to a respective one of said electronic switches, and each comprising an input connected to said pair of telephone conductors, a filter connected to said input having a characteristic pass band distinct from the filter of the other of said pair of said switch controllers; and

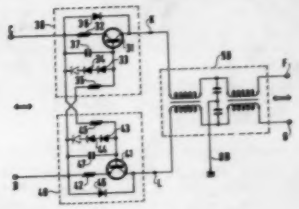
buffering means connected to said filter for providing said firing signal to said respective one of said electronic switches in response to the presence of a signal on said pair of telephone conductors having a frequency within said characteristic pass band, for a predetermined period of time.

4,418,245

INTERFERENCE LIMITING TWO-PORT NETWORK FOR 1+1 TYPE TRANSMISSION SYSTEMS

Yves-Marie Le Grand, Trappes, France, assignor to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed Feb. 22, 1982, Ser. No. 351,079
Claims priority, application France, Nov. 13, 1981, 81 21314
Int. Cl.³ H04J 1/00
U.S. Cl. 179—2.51 **4 Claims**



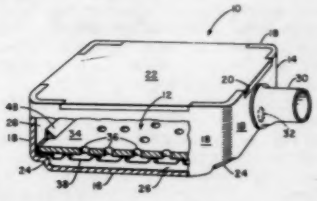
1. An interference-limiting two-port network for use in a 1+1 type transmission system connecting two subscriber terminals via a common two-wire link to a telephone exchange provided with an exchange battery, one of the subscriber terminals being connected via a channel referred to as an audio channel using base band transmission over the common two-wire link and being remotely powered by the exchange battery via said two-wire link, the other subscriber terminal being connected via a channel refered to as a super-audio channel using frequency transposed bands for transmission over the common two-wire link, the audio and super-audio channels being superimposed on the common two-wire link and being separated at the ends of said link by separation filters, each of which includes a low pass filter connecting the common two-wire link to a two-wire line on which the audio channel is isolated, wherein said interference-limiting two-port network is located at the exchange end of the system and comprises two current limiter circuits, each placed in series in a respective one of the two wires of the two-wire line of the audio channel in between the low pass filter of the exchange end separation filter and the rest of the exchange.

4,418,246

CELL ASSEMBLY FOR ELECTRET TRANSDUCER

Joseph A. Sawyer, Camden, Me., assignor to Tibbetts Industries, Inc., Camden, Me.

Filed Oct. 29, 1980, Ser. No. 201,787
Int. Cl.³ H04R 31/00
U.S. Cl. 179—111 E **10 Claims**



1. A cell assembly for an electret transducer comprising, in combination,

a substantially flat backplate, and

a diaphragm formed of flexible sheet material and including a central plate portion and an edge portion around the periphery of the plate portion and attached to the back-

plate, the plate portion having at least one corrugation therein located inwardly of and spaced from the edge portion and being formed to protrude from the superficial plane of a principal surface of the plate portion, said at least one corrugation having a curved protruding surface thereof resting directly upon the backplate, defining at least one vibrationally active region of the plate portion and supporting said at least one active region against electrostatic collapse and with precise spacing from the backplate, said at least one corrugation having a principal dimension extending in a direction parallel to said superficial plane and being configured to relieve membrane stress in the plate portion directed transversely to said direction, said at least one corrugation having a total area of contact with the backplate that is small compared to the total area of said plate portion, one of said backplate and plate portion comprising an electret material.

4,418,247

ELECTRODYNAMIC TRANSDUCER

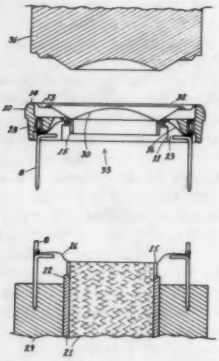
Kaj B. Hansen, Horsens, Denmark, assignor to International Standard Electric Corporation, New York, N.Y.

Filed May 20, 1981, Ser. No. 265,717

Claims priority, application Denmark, May 23, 1980, 2264/80

Int. Cl.³ H04R *1/02, 1/22, 9/04*

U.S. Cl. 179—115.5 R **2 Claims**



1. A method of making an electrodynamic transducer having a diaphragm connected to a coil which is axially movable in an annular slit between inner and outer pole shoes connected to respective poles of a magnet, and where the transducer is made from a magnet part and a separate coil/diaphragm part, the magnet part being made an integral part of a casing unit that includes a guide pin by attaching a pole shoe/magnet unit to the guide pin, comprising the steps of

fixing in a first station a heat deformable, planar diaphragm material to one side of a carrier ring which has an inwardly facing, cylindrical face having the same diameter as an outwardly facing, cylindrical face of the outer pole shoe such that one major surface of the diaphragm material faces the carrier rings,

applying in a second station a heat activitable glue capable of bonding the coil to the diaphragm material to one of said one major surface and said coil at a region which is coaxial with the carrier ring and has the same diameter at the annular slit between the pole shoes,

applying a third station a heat emitting diaphragm forming tool coaxially to a side of the diaphragm material facing away from the carrier ring, simultaneously pressing the diaphragm material into engagement with the forming tool by directing pressurized air against the opposite side of the diaphragm material to form the diaphragm therefrom, and pressing the coil against said region while said coil is supported on a guide templet which has an annular engagement face of the same outer diameter as the outer pole shoe.

4,418,248

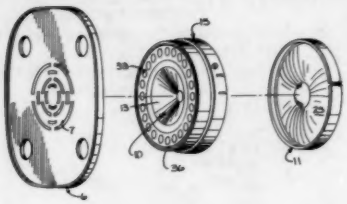
DUAL ELEMENT HEADPHONE

Terry D. Mathis, Thiensville, Wis., assignor to Koss Corporation, Milwaukee, Wis.

Filed Dec. 11, 1981, Ser. No. 329,763

Int. Cl.³ H04R *1/28, 1/22*

U.S. Cl. 179—156 R **3 Claims**



1. In a headphone having a cup assembly with sound openings, the combination comprising:

a first acoustic transducer mounted within the cup assembly and positioned to direct sound through the sound openings, the first acoustic transducer having a cut-off frequency below which its acoustic output is substantially attenuated;

a housing which defines a cavity and a constricted passage which acoustically couples the cavity to the sound openings; and

a second transducer mounted to the housing and positioned to direct sound into the cavity, the second transducer having a resonant frequency below the cut-off frequency of the first acoustic transducer and being operable to provide substantial acoustic output below that cut-off frequency,

wherein the constricted passage is constructed to attenuate the acoustic output of the second acoustic transducer above a selected roll-of frequency, and in which the first acoustic transducer is fastened to a front wall on the housing and the housing is fastened to a face plate which contains the sound openings such that the acoustic output of the first acoustic transducer is directed through the sound openings, and in which ports are formed in the front wall of the housing around the periphery of the first acoustic transducer and the acoustic output of the second acoustic transducer is coupled to the sound openings through the ports.

4,418,249

FOUR-WIRE TERMINATING CIRCUIT

Winfrid Birth, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 22, 1981, Ser. No. 266,210

Claims priority, application Fed. Rep. of Germany, May 23, 1980, 3019835

Int. Cl.³ H04B *1/58*

U.S. Cl. 179—170 NC **12 Claims**

1. A four-wire termination circuit for connecting a two-wire line having a given surge impedance to a transmitting arm and a receiving arm of a four-wire line while simultaneously decoupling the two arms of the four-wire line from one another, comprising:

a terminal impedance connected across the two-wire line which at least approximately simulates the surge impedance of the two-wire line;

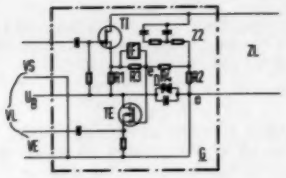
a series arrangement of a first resistor and a signal current

source which causes a transmitted signal current to flow when a signal is applied to a control input thereof by the transmitting arm connected for controlling the signal current source;

the terminal impedance being formed by a series arrangement of a second resistor and a further impedance, and being connected in parallel to the series arrangement of the signal current source and first resistor;

the first and second resistors each having one of their terminals coupled to one another and to a first of the two-wire line wires;

the other terminals of the first and second resistors being connected to one another via a series arrangement of third and fourth resistors;



the receiving arm of the four-wire line being connected between the connection of the first and second resistors and the connection of the third and fourth resistors; and

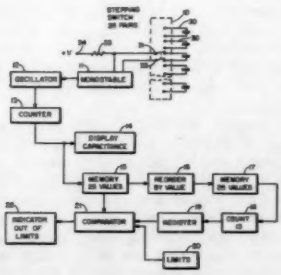
values of said first, second, third and fourth resistors being chosen such that said receiving arm is supplied with a received signal which corresponds to an intermediate voltage substantially proportional to a received signal current from the two-wire line, said intermediate voltage lying between a first and second voltage, the first voltage occurring across the second resistor as a result of a portion of said transmitted signal current modulated in accordance with the transmitted signal in the transmitting arm and by the received signal current flowing therein supplied from the two-wire line, and said second voltage occurring across the first resistor as a result of said transmitted signal current flowing therein.

4,418,250

TELEPHONE CABLE SPLICERS TEST SET AND METHOD OF TESTING

Lawrence O. Hilligoss, Seal Beach, Calif. assignor to Communications Technology Corporation, Los Angeles, Calif.

Filed Dec. 14, 1981, Ser. No. 330,439
Int. Cl.³ H04B *3/46*; G01R *31/08*
U.S. Cl. 179—175.3 R **16 Claims**



1. In an apparatus for measuring the capacitance of a circuit component, the combination of:

a monostable multivibrator having on and off outputs and having a timing circuit for varying the duration of said on output;

means for connecting a circuit component, the capacitance of which is to be measured, in said timing circuit, with the duration of said on output varying as a function of the capacitance of the circuit component;

an oscillator providing output pulses at an output;

a counter having an input and an output; and

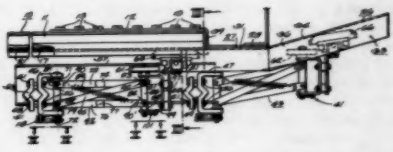
means for connecting said oscillator output to said counter input during said multivibrator on output for counting oscillator output pulses during said on output, with the counter output at the end of said on output varying as a function of the capacitance of the circuit component.

4,418,251

MECHANISM FOR ASSURING REGISTRATION AND CONTACT BETWEEN MULTIPLE TRAVELING COLLECTORS AND PARALLEL CONDUCTORS

Peter W. Hartman, Pittsford; Keith E. Hanford, Macedon; Stephen L. Markle, Rochester, and Elmer C. Hartman, Fairport, all of N.Y., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Dec. 21, 1981, Ser. No. 332,980
Int. Cl.³ B60L *5/36, 5/08, 5/30*
U.S. Cl. 191—35 **8 Claims**



1. In combination,

a substantially horizontal, longitudinally extending trolley rail housing provided with at least first and second downwardly open slots extending longitudinally of the housing,

an electrical conductor mounted in the upper part of each slot presenting a downwardly facing collector-receiving surface, and

an electrical pickup unit adapted to be carried by a vehicle traveling in a path directly below and generally parallel to said housing, said unit including

supporting means,

an arm pivotally mounted at one of its ends to said supporting means for limited pivotal movement about a vertical axis and about a horizontal transverse axis,

means biasing said arm to swing upwardly about said horizontal transverse axis,

means biasing said arm to a predetermined horizontally centered position,

first and second horizontally elongated collectors adapted to extend into said first and second slots, respectively, for electrical contact with said conductors therein,

first and second support members pivotally mounting said collectors, respectively, for limited pivotal movement about horizontal transverse rocking axes,

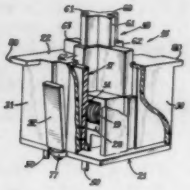
a mounting structure pivotally connected to the other end of said arm for limited horizontal swinging movement about a generally vertical axis, and

equalizer means connecting said first and second support members to said mounting structure including a horizontally extending equalizer beam having opposite ends pivotally connected to said first and second support members, respectively, on generally longitudinal axes and having a central part pivotally connected to said mounting structure on a generally longitudinal axis.

4,418,252
KEY SWITCH ASSEMBLY

Phillip R. Daigle, 4298 Wilson Ave., Rolling Meadows, Ill. 60008

Filed Apr. 5, 1982, Ser. No. 365,565
Int. Cl.³ H01H 15/00
U.S. Cl. 200—16 A 6 Claims



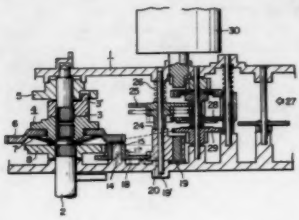
1. A key switch assembly comprising: a housing having a hollow interior and a top wall with a central multi-sided opening therethrough; a key stem member mountable within said housing and having a lengthwise stem portion formed with a transverse cross section conforming to said multi-sided opening to provide non-rotational guided movement of said stem portion therethrough; additional linear guide means within said housing comprising interfitting means on said key stem member and interior walls of said housing for restricting movement of said key stem member to a rectilinear path; a pair of co-planar, laterally spaced contact means mounted within said housing in opposing adjacency to one lateral side of said key stem member; coil contact spring means carried within a socket recess formed inwardly of said one lateral side of said key stem member; said socket recess being formed with parallel end walls, substantially parallel elongated side walls, extending between said end walls, and a planar bottom wall extending between said end and side walls and having a central recessed area of substantially semi-cylindrical formation; said coil contact spring means abutting said end walls and having central coils thereof extending into and confined by said recessed area whereby to angularly cant coil portions thereof lying axially between said central coils and said end walls; the spacing between said side kwalls permitting said coil contact spring means to rotate or roll in said socket recess in response to movement thereof with said key stem member as the latter moves linearly past said contact means thereby to cause the canted coil portions thereof to engage said contact means and clean the same with a scrubbing action.

4,418,253
TWO-SPEED TIMER

Akio Okada, Ida, Japan, assignor to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Mar. 12, 1981, Ser. No. 243,160
Claims priority, application Japan, Mar. 18, 1980, 55-36923[U]
Int. Cl.³ H01H 43/10
U.S. Cl. 200—35 R 9 Claims

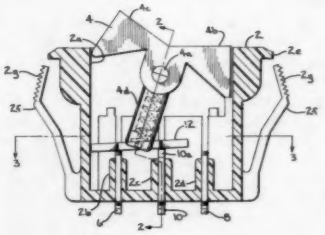
1. A two-speed timer assembly comprising:
a time set shaft;
reduction gear means;
means for coupling said time set shaft to an output of said reduction gear means so that said reduction gear means drives said time set shaft;
an electric motor;
means for coupling said electric motor to said reduction gear means to rotate said reduction gear means;
a disc having engagement means at a position on a circumferential portion thereof, said disc being mounted on said time set shaft;
a driven gear cooperating with said engagement means and having a change-over surface
a speed change gear positioned in contact with said change-over surface, and being slidable on said change-over surface, means for biasing said speed change gear toward said change-over surface, said speed change gear being selectively engaged with gears in said reduction gear means to vary a rotational speed of said output of said reduction gear means and said time set shaft.



4,418,254
ONE PIECE OPERATOR FOR ELECTRIC SWITCH HAVING PIVOTING AND SLIDING CONTACTOR

Robert A. Busby; Gursharan P. S. Nat, and John W. Stearley, all of Smithfield, N.C., assignors to Eaton Corporation, Cleveland, Ohio

Filed Apr. 16, 1982, Ser. No. 369,061
Int. Cl.³ H01H 21/42, 13/00
U.S. Cl. 200—68.3 5 Claims



1. An electric switch comprising in combination:
a housing;
a pair of contact terminals spaced apart in said housing;
a third terminal mounted between said contact terminals in said housing, said third terminal having a contact portion centrally located and substantially narrower in width than the remainder of that terminal and extending above said contact terminals;
a movable contactor of a width greater than said contact portion of said third terminal cooperating with said terminals to complete electrical circuits between said contact portion of said third terminal and either of said contact terminals, said contactor having lateral projections intermediate its ends;
an operator pivotally mounted in said housing and having a portion exteriorly of said housing which is engageable to effect pivoting thereof, said operator having a contactor actuating leg extending interiorly of said housing and having a slot in an end thereof defining spaced end portions, said actuator leg straddling said contactor with said spaced end portions extending along lateral edges of said contactor, recesses in each said spaced end portion engaging said lateral projections to provide a driving connection for sliding movement of said contactor while affording free pivoting of the latter therein, said actuating leg being pivotally movable by said operator to pivot said contactor on the contact portion of said third terminal and

to slide it thereon into engagement with either of said contact terminals; and

spring means carried by said actuating leg for biasing said contactor into engagement with the contact portion of said third terminal.

4,418,255

CONTACT ARRANGEMENT FOR AIR-BLAST SWITCHES WITH A TUBULAR ELEMENT OF FERROMAGNETIC MATERIAL

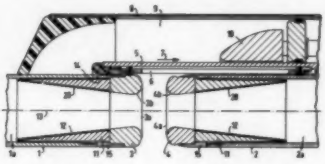
Ruediger Hess, and Heiner Marin, both of Berlin, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 22, 1981, Ser. No. 314,009

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1980, 3041083

Int. Cl.³ H01H *33/18*

U.S. Cl. 200—147 A **5 Claims**



1. A contact arrangement for an air-blast switch comprising:

a tubular first contact piece;

a second contact piece axially associated with the first contact piece and positioned so that upon cutoff under load an arc is drawn between the contact pieces and subjected to a blast of compressed gas;

the first contact piece including at its end face a nozzle body having a conical nozzle aperture contour that expands inwardly from the end face; at its interior a tubular element of ferromagnetic material having an inner wall surface; a layer of graphite disposed on said inner wall surface; and the tubular element being positioned adjacent the nozzle body so that the inner wall surface continues the contour of the nozzle of the aperture.

4,418,256

ELECTRICALLY INSULATING PLASTIC ELEMENT FOR AN ELECTRICAL SWITCHING DEVICE, ESPECIALLY FOR USE AS THE BLAST NOZZLE OF A GAS-BLAST SWITCH

Rudolf Graf, Obermuhen, Switzerland, assignor to Sprecher & Schuh AG, Aarau, Switzerland

Filed Nov. 3, 1980, Ser. No. 202,944

Claims priority, application Switzerland, Jan. 11, 1980, 197/80

Int. Cl.³ H01H *33/59*

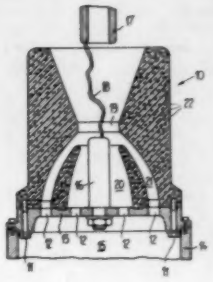
U.S. Cl. 200—148 R **10 Claims**

1. An electrically insulating blast nozzle for a gas-blast switch, comprising:

a plastic material forming said electrically insulating blast nozzle;

said plastic material of the blast nozzle containing a filler which essentially prevents penetration of electromagnetic radiation into the interior of the plastic material of the blast nozzle;

said filler consisting of a powder of at least one metal selected from the group consisting essentially of tungsten, copper, aluminum and iron; and



the proportion of the metal powder amounting to at most 30% by weight.

4,418,257

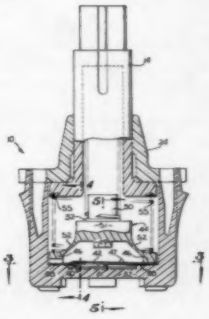
KEYBOARD SWITCH

Michael Muller, Newport Beach, and Gary C. Butts, Huntington Beach, both of Calif., assignors to The Keyboard Company, Garden Grove, Calif.

Filed Nov. 23, 1981, Ser. No. 323,550

Int. Cl.³ H01H *3/12, 13/52*

U.S. Cl. 200—159 B **10 Claims**



1. An improved key switch assembly, comprising:

a housing including a base;

first and second spaced apart electrical contacts disposed on said base, said first contact extending above said second contact;

an electrically conductive resilient diaphragm disposed over said first and second contacts and in physical contact only with said first electrical contact;

a resilient and deformable actuator member disposed generally over said diaphragm, said diaphragm being held relatively taut over said first and second contacts by said actuator member;

actuator means for deforming said actuator member in response to the depression of said key by a user, the deformation of said actuator member forcing said diaphragm to contact said second electrical contact;

whereby an electrical coupling between said first and second contacts occurs upon the actuation of said key switch by a user.

4,418,258

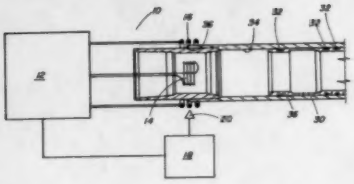
METHOD FOR HEAT TREATING METAL

Richard C. McNealy, and Charles F. Cravens, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Division of Ser. No. 166,739, Jul. 7, 1980, abandoned. This application Feb. 11, 1982, Ser. No. 348,119

Int. Cl.³ H05B *6/38, 6/44*

U.S. Cl. 219—10.41 **3 Claims**



1. The method of induction heating a tubular workpiece to effect a heat treatment of an annular portion thereof, comprising:

positioning said tubular workpiece with said annular portion substantially coaxially disposed between inner and outer induction coils;

rotating said tubular workpiece about its longitudinal axis while said coils are energized to heat said annular portion;

sensing the temperature in said annular portion with an infrared sensor associated with a radiation pyrometer during said rotation of said workpiece; and

controlling the output of said coils in response to the output of said radiation pyrometer, whereby said annular portion is heated to and maintained at a selected temperature level in a substantially uniform manner.

4,418,259

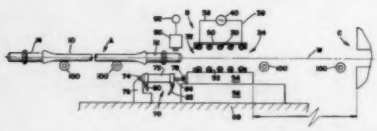
METHOD AND APPARATUS OF UNIFORM INDUCTION HEATING OF AN ELONGATED WORKPIECE

John C. Lewis, Dundas, Canada, assignor to Park-Ohio Industries, Inc., Shaker Heights, Ohio

Filed Aug. 21, 1981, Ser. No. 294,932

Int. Cl.³ H05B *6/40*

U.S. Cl. 219—10.43 **16 Claims**



1. A method for effecting uniform induction heating of an elongated workpiece which includes a first portion having a substantially uniform cross-section over a major portion of the workpiece length and a second portion having a larger cross-section than said first portion, said method comprising the steps of:

(a) providing a multi-turn inductor generally coaxially disposed about and movable along an elongated workpath and adapted to be energized to a predetermined level;

(b) continuously feeding said workpiece at a predetermined constant rate of travel longitudinally along said workpath in a feed direction toward and through said inductor, while the inductor is continuously energized to said predetermined level, for continuously inductively heating the advancing workpiece along the length thereof and sequentially heating the entirety of said workpiece first portion generally to a predetermined desired temperature; and,

(c) moving said inductor in said feed direction along with said workpiece from a first position along said workpath, while the said workpiece second portion is inductively coupled with said energized inductor, to reduce the rate of relative movement between said workpiece and inductor to a preselected level for increasing the effective heating time for said workpiece second portion, whereby said workpiece second portion is also heated to generally said predetermined temperature.

4,418,260

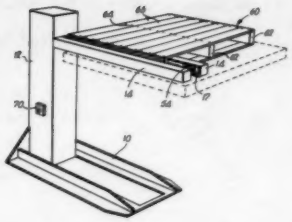
WOOD TREATING METHOD AND APPARATUS FOR FACILITATING REMOVAL OF FERROUS MATERIALS THEREFROM

Jeffrey C. Detrick, 7108 W. 67th St., Overland Park, Kans. 66204

Filed Oct. 19, 1981, Ser. No. 312,246

Int. Cl.³ H05B *6/40;* **B23P** *19/06*

U.S. Cl. 219—10.43 **16 Claims**



1. Apparatus for facilitating removal of a plurality of metallic nails from a pallet having a number of spaced, elongated, wood frame pieces each provided with a pair of opposed, longitudinally-extending sides and a pair of longitudinally-extending edges, together with a series of wood members each having an inner and an outer surface, said inner surfaces being held in engagement with a corresponding one of said edges by said fasteners extending through the members and into the frame pieces, said apparatus including:

induction coil means having a pair of elongated loops,

said loops being spaced apart for reception of one of said frame pieces therebetween with one loop extending along one of said sides thereof and the other loop extending along the other of said sides thereof adjacent a portion of the fasteners extending beyond the proximal members into the one frame piece,

whereby, upon generation of sufficient heat by said coil means, the temperature of the fasteners is raised to such extent as to cause the wood surrounding such fasteners to become charred, rendering the fasteners easily removed from said proximal members and said one frame piece.

4,418,261

MICROWAVE OVEN AND VENTILATOR SYSTEM

John J. Jailor, Marengo, and Ronald A. Thalacker, Amana, both of Iowa, assignors to Amana Refrigeration, Inc., Amana, Iowa

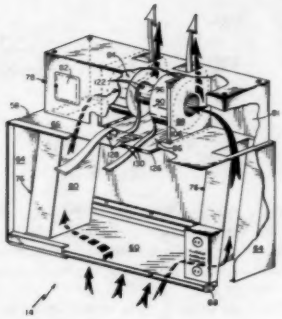
Filed Jan. 15, 1982, Ser. No. 339,787

Int. Cl.³ H05B *6/64;* **F24C** *15/30*

U.S. Cl. 219—10.55 R **4 Claims**

1. In a combined microwave and ventilator system for installation above a range top or the like, a ventilator assembly including an oven receiving and supporting compartment, a first air path through said ventilator, said first air path including air intake means underlying said oven compartment, vertically extending air passage means positioned laterally of and out of communication with said oven compartment, said air passage means being in air receiving communication with said air intake means, air discharge means remote from said air intake means and said oven compartment, said air passage means communicating with said air discharge means, a power driven exhaust blower assembly adjacent said air discharge means for effecting a flow of air along said first air path with

said flow moving into said air intake means, along said air passage means and out said discharge means, a second air path extending through said oven receiving compartment and including an air intake above and remote from said air intake means of the first air path, a third air path for supplying cooling air to said blower assembly, said third air path comprising an air intake above and remote from said air intake of said second air path and said air intake means of said first air path, said third air path communicating with said air discharge means of said first air path whereby both said first air path and said third air path exhaust through a common air discharge means, said ventilator assembly including a main housing having a bottom panel, opposed side panels, and a top panel, a downwardly directed cavity defined immediately beneath and substantially coextensive with said bottom panel, said cavity comprising said air intake means of said first air path, said air passage means of said first air path comprising a pair of vertically elongated closed channels, one extending along each of said side panels, each of said channels having a lower end in direct communication with the cavity underlying said panel, said oven receiving compartment being defined between said channels, means for associating filters with said cavity defining said air intake means, a secondary housing of lesser depth than said



main housing, said secondary housing overlying said main housing, said top panel of said main housing constituting the bottom of said secondary housing, said air passage means defining channels having upper ends opening into said secondary housing, said secondary housing including a chamber receiving said blower assembly, said air discharge means of said first path exiting outward from said secondary housing, said chamber receiving said blower assembly being generally aligned over said oven compartment, said secondary housing including side chambers to each side of said blower assembly chamber and in air flow passing communication therewith, one of said air passage means channels communicating with each side chamber, said third air path comprising an opening defined through said top panel between said blower assembly chamber and said underlying oven compartment, a shallow tray underlying said top panel within said oven compartment, said tray underlying said opening and extending beyond said secondary housing, said air intake of said third air path comprising at least one intake opening into that portion of the tray beyond the secondary housing, said tray having peripheral edge portions sealed to the overlying top panel to preclude communication between said oven compartment and the interior of the tray.

4,418,262

PROGRAMMABLE MICROWAVE OVEN WITH PROGRAM DISPLAY

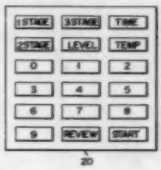
Tominitsu Noda, Fuji, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 186,622, Sep. 12, 1980, abandoned. This application May 12, 1982, Ser. No. 377,678

Claims priority, application Japan, Sep. 14, 1979, 54-118061; Sep. 14, 1979, 54-118073

Int. Cl.³ H05B 6/68

U.S. Cl. 219—10.55 B **3 Claims**



1. A programmable microwave oven including means for reviewing previously programmed cooking instructions, comprising:

a keyboard data input means having function keys for inputting data representing cooking instructions defining a sequence of heating power levels and a cooking time or a cooking temperature associated with each such power level;

a means for exciting a heating element at selectable power levels;

a display means for displaying data previously inputted via said keyboard data input means; and

a control means, including a microprocessor, coupled to said keyboard data input means, exciting means, and display means, including read only memory (ROM) means for storing a fixed program, a random access memory (RAM) means for memorizing data inputted via said keyboard data input means, and a central logic unit for (a) carrying out the fixed program of said ROM means in accordance with the data inputted via said keyboard data input means and (b) generating signals for controlling said exciting means in accordance therewith so as to obtain a combination of power levels and times or temperatures associated therewith according to the cooking instructions previously inputted via said keyboard data input means,

said keyboard data input means, said RAM means and said display means being controlled according to said fixed program of said ROM such that in response to a single actuation of said reviewing means after data has been entered via said keyboard data input means and stored in said RAM means, the so stored data in said RAM means are successively read out and displayed before the cooking is carried out in accordance with data indicative of the cooking instructions, the display changing automatically at predetermined intervals of time between successive displays to display successive data,

the control means inhibiting the execution of the cooking instruction unless they have been reviewed by operation of the reviewing means.

4,418,263

ELECTROEROSIVE WIRE-CUTTING METHOD AND APPARATUS WITH A SHAPED WIRE ELECTRODE

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Mar. 3, 1981, Ser. No. 240,246

Claims priority, application Japan, Mar. 7, 1980, 55-28979

Int. Cl.³ B23P 1/08

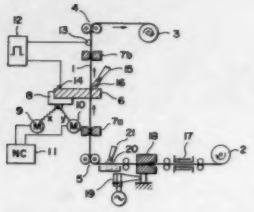
U.S. Cl. 219—69 W **15 Claims**

1. A method of electroerosively wire-cutting a conductive

workpiece with a continuous wire electrode supported to extend and axially transported continuously to move between a supply site and a collection site through a cutting zone, said method comprising the steps of:

(a) feeding the wire electrode having a given cross-sectional contour from said supply site;

(b) downstream of the supply site and upstream of the cutting zone, shaping said wire electrode and forming it with a cross-sectional contour varied in shape from said given cross-sectional contour and preselected in conjunction with a localized pattern of cut to be progressively machined in said workpiece;



(c) feeding said wire electrode shaped with said preselected cross-sectional contour into said cutting zone to permit said shaped wire electrode to continuously move therethrough in an electroerosive wire-cutting relationship with said workpiece and to be fed continuously toward the collection site; and

(d) effecting relative displacement between said moving wire electrode and said workpiece along a predetermined path to form the desired wire-cut pattern in said workpiece.

4,418,264

DEVICE AND METHOD FOR REPAIRING CONDUCTOR PATH BREAKS BY WELDING

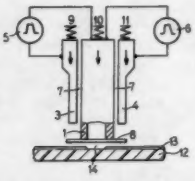
Rüediger Thorwarth, Glonn, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 8, 1981, Ser. No. 281,328

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1980, 3025875

Int. Cl.³ B23K *11/32*

U.S. Cl. 219—78.01 **5 Claims**



1. A device for repairing conductor path interruptions on printed circuit boards by means of micro-resistance welding a specific shaped part from a foil strip at both sides of the conductor path interruption, comprising: a three-part electrode system formed of a central inside electrode equipped with a vacuum connection means for sucking-on the shaped part, and around which two semicircular-shaped outside electrodes sit concentrically, the three electrodes in each case being separated from one another electrically by means of an air gap, and the three electrodes being spring-suspended mechanically, independently of one another.

5. A method for repairing conductor path interruptions on printed circuit boards by means of micro-resistance welding a specific shaped part at both sides of the conductor path interruption, comprising the steps of: providing a three-part electrode system formed of a central inside electrode with a vacuum connection and two outer electrodes on each side of the central electrode; sucking-on the shaped part at the end of the central electrode; moving the central electrode to place the shaped part at the interruption; moving the two outer electrodes down into contact with ends of the shaped part where a micro-resistance weld is desired; applying a first micro-resistance welding pulse between one of the outer electrodes and the central electrode; and providing another micro-resistance welding pulse after the first welding pulse to the other outside electrode and central electrode.

4,418,265

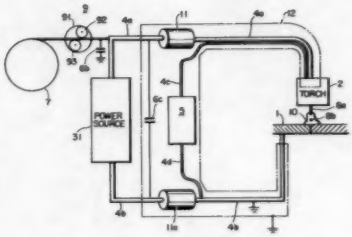
DEVICE WITH HIGH FREQUENCY CONTACTLESS TYPE ARC GENERATING MECHANISM

Yoichiro Tabata; Shigeo Ueguri; Hirotsugu Komura, all of Amagasaki, and Toshio Ito, Nagoya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1981, Ser. No. 239,926

Int. Cl.³ B23K *9/06*

U.S. Cl. 219—130.4 **8 Claims**



1. A welding device with a high frequency, contactless type arc generating mechanism which comprises:

a single electrode disposed confronting an electrically conductive material to be processed therewith through an electric discharge gap;

a main power source for supplying an arc discharge current between said electrode and said material;

an electrical conductor for coupling said main power source to said electrode;

a high frequency electric source for applying a high frequency high voltage between said electrode and said material to generate a high frequency discharge for arc ignition in said electric discharge gap;

a high frequency magnetic choke element surrounding a predetermined part of said electrical conductor between said main power source and said electrode, said high frequency magnetic choke element comprising a plurality of stacked ferrite discs in the form of a cylinder, each of said ferrite discs having a central hole, said electrical conductor passing through said hole; and

a high-frequency bypass capacitor connected in parallel with said main power source and having one terminal connected to said electrical conductor between said magnetic choke element and said main power source.

4,418,266

WELDING SYSTEM FOR CONTOUR JOINTS

William H. Rosenbeck, Torrington; Frederick Eckart, Southington, and Francis C. Gerath, Collinsville, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Oct. 21, 1981, Ser. No. 313,412

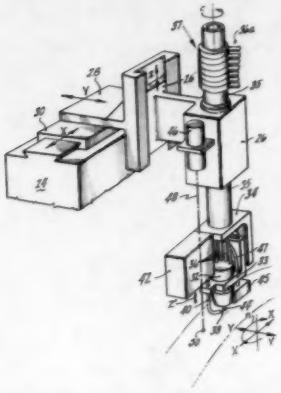
Int. Cl.³ B23K *9/12*

U.S. Cl. 219—137 R **10 Claims**

7. The method of arc welding a joint on the surface of a

workpiece having a complex three dimensional x, y, and z axis surface contour, using an arc welding head movably mounted on a movable carriage, characterized by:

moving the carriage along a predetermined x, y, and z axis ′ path, generally following the path of the weld joint;



moving the head with z′ motion along the z axis relative to the carriage to control the arc length; and rotating the welding head with c motion about a z′ axis, to orient a wire feed unit attached thereto for proper wire feed into the welding arc zone between the head and the workpiece.

4,418,267

PROTECTION APPARATUS

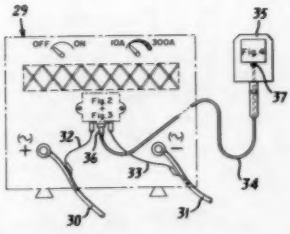
Josef Pfanzelt, Forstenrieder Allee 17, 8000 Munchen 71, Fed. Rep. of Germany

Filed May 5, 1981, Ser. No. 260,771

Claims priority, application Fed. Rep. of Germany, May 6, 1980, 3017215; May 6, 1980, 3017241

Int. Cl.³ B23K *9/32*

U.S. Cl. 219—147 **15 Claims**



1. The combination with electric welding apparatus comprising welding electrodes and a welding electrode circuit,

an automatic electrically operated protective system for protecting a welder from harmful light rays and sputtering emanating from the welding zone, said system comprising an electrically controlled light shield means changeable from an open condition in which it permits a free view of the weld area and a closed condition in which it blocks harmful light rays and particles projected from the weld area, and

an electric circuit controlling said light shield means, said electric circuit means comprising threshold value switching means having an output coupled with said light shield means and an input coupled with said welding electrode circuit, said threshold value switching means being responsive to switching values analogous to the absolute values of the electrode circuit voltage, to produce at its output a light shield opening signal when the absolute value of the voltage in the welding electrode circuit is smaller than the electrode open circuit voltage but greater than the maximum electrode welding voltage upon ignition of the welding arc, and to produce a light shield closing signal, prior to the ignition of an arc, when the absolute value of the electrode circuit voltage is greater than the electrode short circuit voltage and only slightly smaller than the electrode open circuit voltage.

4,418,268

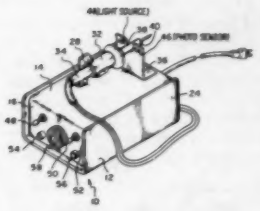
SOLDERING IRON HOLDER WITH READY INDICATOR AND SAFETY SHUTOFF

Harold A. Munshaw, 2624 Starr Rd., Pennsauken, N.J. 08109

Filed Jan. 22, 1981, Ser. No. 227,439

Int. Cl.³ H05B *1/02*; B32K *3/02*

U.S. Cl. 219—242 **4 Claims**



1. A soldering iron holder including:

a substantially rectangular box-shaped housing;

support means mounted on said housing for supporting an electric soldering iron thereon;

switch means carried by said housing for applying electrical power to a soldering iron so supported to thereby heat the same;

indicator means carried by said housing;

a first timing circuit, said first timing circuit being activated upon initiation of said switch means and being connected to said indicator means such that said indicator means is activated after a predetermined and preset time duration as measured by said first timing circuit to indicate readiness of the iron for use;

means for deactivating said switch means including means for sensing the removal of the iron from said support means and a resettable second timing circuit which deactivates said switch means after a predetermined time period greater than said time duration has been measured, said sensing means resetting said second timing circuit each time the iron is removed from said support means whereby the iron is turned off whenever it has not been in use and remains on said support means for said predetermined time period.

4,418,269

MULTI-ELECTRODE BOILER

Raymond H. Eaton-Williams, "Heathers" Farnaby Dr. Sevenoaks, Kent, England TN13 2LQ

Filed Mar. 17, 1981, Ser. No. 244,621

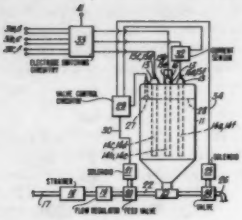
Claims priority, application United Kingdom, Mar. 24, 1980, 8009842

Int. Cl.³ H05B *1/02, 3/60*

U.S. Cl. 219—295 **10 Claims**

1. A multi-electrode boiler, especially for use as a humidifier, comprising water-changing means arranged to allow at least some of the water in the boiler to be changed, monitoring means arranged to monitor the electrical-current which flows

through at least one of the electrodes of the boiler, control means responsive to the monitoring means to control the change of at least some of the water in the boiler to maintain the electrical-current in said at least one monitored electrode within a predetermined range of values, in which switching circuitry is provided to switch in and out electrodes of the boiler to vary the boiling rate, wherein the monitoring means



are arranged to monitor the electrical current which flows through at least one but less than all of the electrodes in the boiler, and wherein the switching circuitry ensures that the electrodes of the boiler which are not monitored are switched in successively in such an order, for successively increasing boiling rate, that the value of the electrical-current passing through said at least one monitored electrode remains within a predetermined range of values.

4,418,270

ELECTRIC LIQUID HEATING APPLIANCE

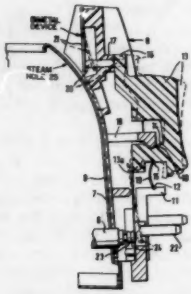
Michael Inskip, Stoke-on-Trent, and Alan Warren, Western Downs, both of England, assignors to TI Russell Hobbs Limited, England

Filed Jun. 16, 1981, Ser. No. 274,266

Claims priority, application United Kingdom, Jun. 18, 1980, 8019847

Int. Cl.³ H05B *3/80*; **A47J** *31/56, 27/21*

U.S. Cl. 219—328 **4 Claims**



1. An electric liquid heating appliance comprising a body shell, a heating element within the body shell and having two ends which project through the body shell, a switch housing mounted on the outside of the body shell, a switch operating member supported relative to the switch housing and operable to open and close a pair of switching contacts for interrupting and making respectively an electrically conductive path, which includes the heating element, between a pair of terminal pins, a pivot about which the switch operating member can rock between first and second positions and against which the switch operating member is urged by a spring means acting between the switch operating member and a support, and means on said switch housing providing said pivot and said support, said switch housing being formed as an integral plastics moulding to fix the relative locations of said pivot and said support.

4,418,271

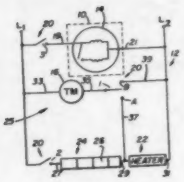
CONTROL SYSTEM INCLUDING A TIMING MECHANISM FOR A DRYING APPARATUS

Steven W. Smock, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 192,948, Oct. 2, 1980, abandoned. This application May 3, 1982, Ser. No. 374,185

Int. Cl.³ H05B *1/02*

U.S. Cl. 219—493 **5 Claims**



1. In a dryer including a dryer motor wherein material is dried through heat, a control system regulating the amount of time and heat applied thereto, comprising:

(a) a timing mechanism including a timer motor, cam means coupled to said timer motor, and cam switch means responsive to said cam means to open and close electrical circuits including a first cam switch connected to said dryer motor, a second cam switch connected to a temperature regulating means, and a two position cam switch,

(b) temperature regulating means electrically connected in series with a heating means, and

(c) electrical circuit means including said two position switch means wherein when said two position switch means is in a first position said timer motor is in parallel with said second cam switch, said temperature regulating means and said heating means, and when in a second position said timer motor is in parallel with said temperature regulating means and said second cam switch means and in series with said heating means.

4,418,272

ELECTRIC HEATER

Hanno Roller Kandel, and Karl-Heinz Nauerth, Erlenbach, both of Fed. Rep. of Germany, assignors to Fritz Eichenauer GmbH & Co. KG, Kandel, Fed. Rep. of Germany

Filed Jun. 4, 1981, Ser. No. 270,598

Int. Cl.³ H05B *3/02*

U.S. Cl. 219—541 **13 Claims**

1. Electric heater, especially for small electric appliances, such as hair roller heaters, egg boilers, or the like, comprising:

at least one flat, heating element having contact-making zones on opposite planar parallel surfaces thereof;

electrical connection elements in the form of essentially planar contact plates, a contact plate being placed on each of said opposite surfaces;

and a holding member formed of a flat sheet of material which has been bent into a U-shape having legs which are

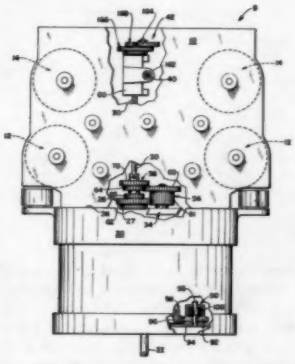
mutually spaced in a manner so as to hold the contact plates clamped fast to said at least one heating element between the legs of said U-shape of the holding member by the direct action of a clamping pressure exerted thereby, said holding member extending over the entire width of the at least one heating element and the contact plates having a heat conducting electrical insulating layer upon an inner surface of said U-shape between said plates and holding member.

4,418,273

MECHANICAL FUEL PUMP COMPUTER CONVERSION MECHANISM

Raymond H. Devanney, Winsted, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Mar. 22, 1982, Ser. No. 360,394
Int. Cl.³ B67D 5/72; F16H 3/22; G06C 15/04
U.S. Cl. 235—61 L **21 Claims**



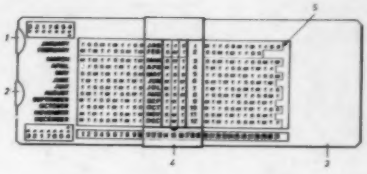
1. In a mechanical computer for a fuel dispenser operable for setting the unit volume price and registering the volume and cost amounts of fuel dispensed and having a volume counter drive train, at least one rotary volume counter, with a plurality of coaxial number wheels of increasing order of significance, rotated by the volume counter drive train for registering the volume amount of fuel dispensed, a cost counter drive train with a first rotary cost shaft rotated in accordance with the volume amount of fuel dispensed and the set unit volume price and a second rotary cost shaft transverse to and rotated by said first rotary cost shaft, and at least one rotary cost counter, with a plurality of coaxial number wheels of increasing order of significance, rotated by said second rotary cost shaft for registering the cost amount of fuel dispensed, the improvement wherein the mechanical computer comprises a cost drive ratio selector mechanism for selectively providing a plurality of different cost counter drive ratios between said first and second rotary cost shafts, the cost drive ratio selector mechanism comprising an intermediate rotary shaft generally parallel to one of said first and second rotary shafts, first and second intermeshing gear means adapted to be selectively mounted on said one and said intermediate rotary shafts to selectively intermesh to selectively provide a plurality of different drive ratios therebetween, and third and fourth intermeshing gear means mounted on the said intermediate rotary shaft and the other of said first and second rotary shafts to provide a rotatable drive therebetween.

4,418,274

SLIDE RULE - CALENDAR

Guido Masillo, Via Lanzalone, 26, 84100 Salerno, Italy

Filed Mar. 20, 1981, Ser. No. 245,783
Claims priority, application Italy, Mar. 24, 1980, 35659/80[U]
Int. Cl.³ G06C 3/00; G09D 3/10
U.S. Cl. 235—85 R **1 Claim**



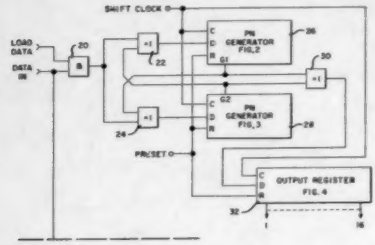
1. An infinite calendar comprising a flat sheath member defining an enclosed space having closed front and rear surfaces, closed top and bottom surfaces, a closed first end, and an open second end; first and second slide members slidably received within the enclosed space and slideable out said open second end and with respect to each other, said first and second slide members being of a length to abut against said closed first end when fully withdrawn within said enclosed space; said first slide member having thereon two rows of indicia correlated respectively to the first two months of the year, said second slide member having thereon rows of indicia correlated respectively to the remaining months of the year, each row of indicia including indicia indicative of the days of the week for a plurality of weeks at least equal to the number of weeks in the correlative month; each of said slide members additionally having an indicator indicium thereon; said sheath member front surface having thereon two sets of seven correlating indicia, one set of correlating indicia adjacent each of said indicator indicia when said slide members are positioned in said enclosed space; said sheath member further having along one edge thereof numerical indicia corresponding to the days of the month and having a transparent window overlying said slide members rows of indicia when said slide members are in said enclosed space to make said rows of indicia visible through said transparent window; a cursor member slidably positioned on said sheath member and having a transparent window overlying said front surface transparent window to make said rows of indicia visible therethrough and a marker adjacent said sheath member one edge; one of said members having thereon a table correlating the years of the Gregorian calendar with a pair of said correlating indicia, one of said pair of said correlating indicia being from the set adjacent the indicator indicium of said first slide member and the other of said pair of said correlating indicia being from the set adjacent the indicator indicium of said second slide member, the pair of correlating indicia correlated with a selected year of the Gregorian calendar being the correlating indicia to be positioned adjacent said indicator indicia to position said first and second slide members such that said rows of indicia align with said numerical indicia to provide a calendar for the selected year with said cursor member slidable to a selected one of said numerical indicia to show through said transparent windows the day of the week for the day of the month corresponding with the selected numerical indicium for each month of the selected year.

4,418,275

DATA HASHING METHOD AND APPARATUS

DuWayne D. Oosterbaan, Escondido, and Gerard J. Williams, Valley Center, both of Calif., assignors to NCR Corporation, Dayton, Ohio

Filed Dec. 7, 1979, Ser. No. 101,319
Int. Cl.³ H03K *21/30*
U.S. Cl. 377—33 **2 Claims**



1. A randomizing apparatus characterized by:

data signal input means;

first and second pseudo-random generators (**26** and **28**) each having an input and an output operatively connected in a cross-coupled configuration (**22** and **24**) for generating a pseudo-random signal in response to data signals;

logic means (**20**) for coupling the data signal input means to the input of said first and said second pseudo-random generators (**26** and **28**);

output register means (**32**) adapted to serially receive said generated pseudo-random signal for providing a segment of said serially received signal in parallel at its outputs; and

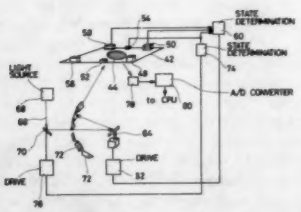
programmable counting means (**36–56**) for counting count pulses, said counting means having an input terminal operatively connected to said data signal input means and being adapted to receive a predetermined number, said predetermined number having a value equal to the number of bits that are to be used to form the segment in said output register means, said counting means further providing an output valid signal when said counted counting pulses corresponds to said predetermined number, thereby indicating the availability of the segment of said generated pseudo-random signal at the outputs of said output register means.

4,418,276

OPTICAL BAR CODE READER

Kenrow Yatsunami, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jan. 25, 1982, Ser. No. 342,406
Claims priority, application Japan, Jan. 30, 1981, 56-13228
Int. Cl.³ G06K *7/14*
U.S. Cl. 235—462 **4 Claims**



1. An optical bar code reader which selectively operates in a coarse scanning mode and a fine scanning mode for reading a bar code label, said optical bar code reader comprising:

detection means for detecting the kind of said bar code label;

determination means for selectively developing a first control signal and a second control signal in response to an output signal of said detection means; and

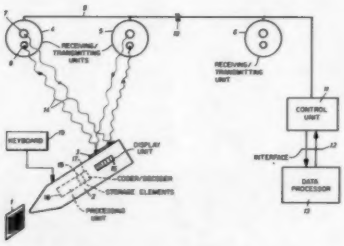
control means for selectively placing the optical bar code reader in said coarse scanning mode in response to said first control signal, and in said fine scanning mode in response to said second control signal.

4,418,277

APPARATUS FOR COLLECTING, TRANSMITTING AND PROCESSING DATA STORED IN CODE, PREFERABLY IN BAR CODE

Hartmut Tremmel, In der Kappisau 4, 6921 Sinsheim, Staatsange, and Hartmut Bernot, Schmeilweg 3, 6900 Heidelberg, Staatsange, both of Fed. Rep. of Germany

Filed Nov. 18, 1981, Ser. No. 322,716
Claims priority, application Fed. Rep. of Germany, Nov. 19, 1980, 3043557
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—472 **6 Claims**



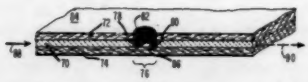
1. An improved apparatus for collecting, transmitting, and processing data stored in a code such as a bar code, said apparatus including a portable wand reader with processing and transmitting units for radiating information in the form of electromagnetic waves, a stationary receiver physically separated from the wand reader, and a data processor coupled to the stationary receiver, wherein the improvement comprises: the wand reader also has a receiving unit, the stationary receiver is part of a stationary receiving/transmitting unit which includes a transmitter for the receiver of the wand reader, and a plurality of physically separated stationary receiving/transmitting units connected in parallel to one another are associated with the wand reader, the receiving/transmitting units being coupled to the data processor for the processing and storing of the data and the data transfer occurring both ways from the wand reader to the data processor and vice versa.

4,418,278

EMBEDDED OPTIC FIBER PAGE

Lee F. Mondshein, 31 Green Park, Newton, Mass. 02158

Filed May 20, 1981, Ser. No. 265,533
Int. Cl.³ G06K *19/00*
U.S. Cl. 235—487 **4 Claims**



1. An input/output device in the form of a page having one or more optical fibers therein, said device being selectively codeable by an individual using the device, the one or more

optical fibers being capable of being switched, after manufacture, by said individual from one informational state to another, each of said fibers having a normal light-transmissive state and a non-light-transmissive state in which the selection of the informational state of an optical fiber is selectively codeable in real time from a position readily accessible by the individual at a designated location on a surface of the page, the device comprising:

a thin, planar sheet having opposed surfaces, a plurality of edges, and one or more designations on one of said surfaces at one or more predetermined locations;

at least one optical fiber embedded in said thin sheet, said fiber being divided into two sections to provide two ends embedded in the sheet, said embedded ends having faces orthogonal to the longitudinal axis of said fiber, the embedded ends being spaced apart by an amount which permits light transmission therebetween such that light in one section of the fiber is transmitted to the other section of the fiber across an interface established by said embedded ends for establishing the normal light-transmissive state of said fiber;

the designation-containing surface of said sheet having at least one aperture therethrough associated with a respective designation, said aperture extending through said designation-containing surface to the space defined by the corresponding spaced-apart ends, said embedded ends being disposed within said aperture;

each section of said fiber extending within the plane of said thin sheet to an edge thereof; and

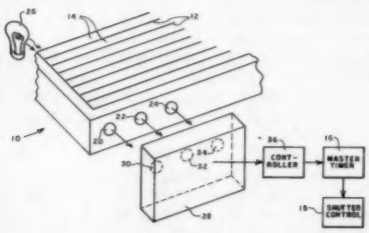
means insertable from said apertured surface through said aperture into the space defined by the spaced-apart embedded ends for selectively changing the normal light-transmissive state of said fiber to the non-light-transmissive state by occluding the space between said embedded ends, such that the state of said optical fiber embedded in said thin planar sheet is readily changeable from one state to the other from the designation-containing surface of said device after the manufacture thereof, thereby to permit real-time coding of said device by the individual using said device.

4,418,279

AUTOMATIC CRT EXPOSURE REGULATION

Robert E. Hager, Schaumburg, and Laurence H. Moss, Hoffman Estates, both of Ill., assignors to Zenith Radio Corporation, Glenview, Ill.

Filed Sep. 28, 1981, Ser. No. 306,448
Int. Cl.³ H01J 40/14
U.S. Cl. 250—201 **12 Claims**



8. In a CRT manufacturing operation which includes a light house for exposing a coated CRT screen and a mated mask to a source of illumination, and which includes a master timer for limiting exposure to a preset time, an exposure regulator for automatically changing exposure time to accommodate masks having different aperture sizes, comprising:

means for selecting and storing a plurality of exposure time modifiers, one for each expected mask aperture size;

means for sensing the aperture size of the mask to be exposed;

decoding means responsive to a sensed mask aperture size for selecting one of said modifiers; and

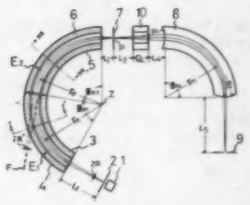
means coupled to the master timer and responsive to the selected modifier for altering the preset exposure time of the master timer in accordance with the selected modifier so as to set exposure time to correspond with the sensed aperture size.

4,418,280

DOUBLE FOCUSING MASS SPECTROMETER

Hisashi Matsuda, Takarazukashi, Japan, assignor to Jeol Ltd., Tokyo, Japan

Filed Jun. 5, 1981, Ser. No. 270,845
Claims priority, application Japan, Jun. 13, 1980, 55-79699
Int. Cl.³ D01D 59/44
U.S. Cl. 250—296 **7 Claims**



1. A double focusing mass spectrometer comprising:

an ion source for producing an ion beam;

first inner and outer electrodes for producing a diverging electrostatic field so as to diverge the ions emitted from said source;

second inner and outer electrodes for producing a converging electrostatic field so as to converge the ions delivered from said diverging electrostatic field at an intermediate focus point;

means for producing a converging magnetic field so as to re-converge the ions once converged at said intermediate focus point by said converging electrostatic field; and

means for detecting the ions converged by the magnetic field;

such that said two electrostatic fields are connected with each other without substantial free space therebetween, and that said intermediate focus point of the ion beam is formed at a position adjacent to the ion exit boundary of said converging electrostatic field.

4,418,281

QUENCH CORRECTION IN LIQUID SCINTILLATION COUNTING

Donald L. Horrocks, Placentia, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 29, 1981, Ser. No. 278,769
Int. Cl.³ G01T 1/00, 1/20
U.S. Cl. 250—328 **8 Claims**

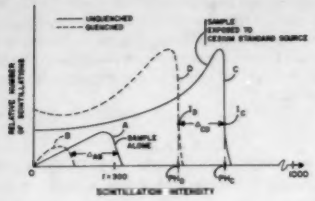
1. A method of quench correction in the measurement of a liquid scintillation sample comprising the steps of:

(1) establishing from a measure of sample quench a quench corrected pulse height window for measuring scintillations of the sample;

(2) establishing a threshold pulse height which distinguishes a first region for which said measure of sample quench is generally proportional to the effect of quench on the sample pulse height spectrum and a second region for which said measure is generally nonproportional;

(3) comparing the quench corrected pulse height window to the threshold pulse height; and

(4) adjusting the relative position of the corrected pulse height window if the step of comparing indicates that the



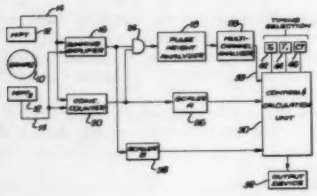
quench corrected pulse height window lies in the region of nonproportionality.

4,418,282

METHOD AND APPARATUS FOR DETERMINING RANDOM COINCIDENCE COUNT RATE IN A SCINTILLATION COUNTER UTILIZING THE COINCIDENCE TECHNIQUE

Donald L. Horrocks, Placentia, Calif., assignor to Beckman Instruments, Inc., Fullerton, Calif.

Filed Jun. 29, 1981, Ser. No. 278,770
Int. Cl.³ G01T *1/20*
U.S. Cl. 250—366 **9 Claims**



1. For use with a scintillation counter utilizing at least two detectors in a coincidence counting technique, a method for determining a random coincidence count due to events resulting in single-quantum emissions which may chance to occur in such a manner that pairs of essentially coincident single-quantum events are detected one on each detector and are erroneously counted as radioactive disintegrations occurring in a sample, said method comprising the steps of:

counting the number of essentially coincident events detected in both detectors of the counter during a sample count time to measure the radioactivity of the sample;

counting the number of essentially coincident events detected in both detectors of the counter during a random coincidence monitoring time occurring during part of the sample count time;

counting the total number of events detected in both detectors, regardless of coincidence in time, during the random coincidence monitoring time; and

determining from the results of said counting steps during the random coincidence monitoring time, a random coincidence count rate attributable to chance coincidences of single-quantum events in accordance with the equation

$$S_c=(t_R/2)\,(TCN\text{-}TC)^2,$$

where:

S_c=random coincidence count rate,

t_R=coincidence resolving time, which is the longest time by which events can be separated and still considered coincident,

TC=counts per minute recorded in said second counting step, and

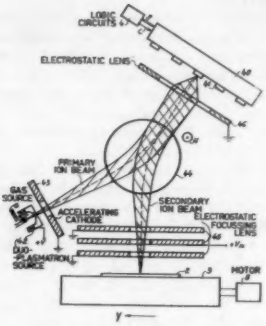
TCN=counts per minute recorded in said third counting step.

4,418,283

MICROLITHOGRAPHIC SYSTEM USING A CHARGED PARTICLE BEAM

Jacques Trotel, Paris, France, assignor to Thomson-CSF, Paris, France

Continuation of Ser. No. 59,200, Jul. 20, 1979. This application Nov. 17, 1980, Ser. No. 207,707
Claims priority, application France, Jul. 24, 1978, 78 21826
Int. Cl.³ H01J *37/147*
U.S. Cl. 250—492.2 **15 Claims**



1. A microlithography device for drawing a predetermined pattern on a sample comprising:

a movable object holder for carrying said sample;

means for moving said object holder;

a data source containing readable data specifying said pattern;

means for providing charged particles including an array of elements arranged in a first plane, the elements positioned so as to correspond to a matrix, each element emitting a beam of charged particles when modulated to a first "on" state and not emitting a beam of charged particles when modulated to a second "off" state;

position sensor means for sensing the displacement of said object holder and hence the displacement of said sample carried on said object holder;

an imaging system for focusing the charged particle beams from said array of source elements into the plane of said sample; and

means, coupled to said data source and to said position sensor means, for sequentially applying signals to said array of elements so as to modulate them in accordance with said pattern and in synchronism with the displacement of said object holder

said means for providing charged particles comprising a single source of charged particles, focusing means for producing a focused beam of said particles and a magnetic prism for deflecting said focused beam toward said array of elements through an electrostatic lens, each element being operable in an active state in which charged particles issuing from said single source are reflected toward said sample through a further passage through said lens and prism, and operable in a passive state in which no such reflection occurs.

4,418,284

SOLID-STATE COLOR-IMAGE SENSOR AND PROCESS FOR FABRICATING THE SAME

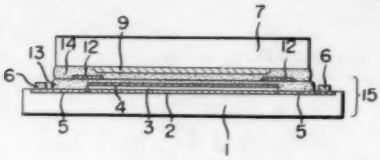
Kazufumi Ogawa; Shigeru Kondo, both of Hirakata; Yoshiko Yasuda, Sakai; Taketoshi Yonezawa, Ibaraki, and Isamu Kitahiro, Yawata, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 11, 1981, Ser. No. 242,577

Claims priority, application Japan, Mar. 17, 1980, 55-33805; Mar. 19, 1980, 55-35291

Int. Cl.³ B29C *27/10;* **B32B** *31/20;* **H01L** *31/18*

U.S. Cl. 250—578 **6 Claims**



1. A solid-state color-image sensor characterized by the provision of

(a) a first resin layer which is formed over a picture-element grid on a solid-state color-image sensor chip and which is transparent at least to the visible light range,

(b) a light-shielding layer which is formed over said first resin layer so as to optically shield a predetermined portion of said picture-element grid, and

(c) a color filter chip comprising a glass substrate and a filter pattern formed thereon, and

(d) a second resin layer with which said color filter is bonded to said light-shielding layer and which is transparent at least to the visible light range.

2. A process for fabricating solid-state color-image sensors characterized by the steps of

(a) forming a first resin layer over a picture-element grid on a solid-state color-image.sensor chip, said first resin layer being transparent at least to the visible light range,

(b) forming a light-shielding layer over the first resin layer so as to optically shield an area of said picture-element grid, and

(c) bonding a color filter fomred on a glass substrate to said light-shielding layer with a second resin which is transparent at least to the visible light range.

4,418,285

SYSTEM AND METHOD FOR CONTROLLING A TURBINE POWER PLANT IN THE SINGLE AND SEQUENTIAL VALVE MODES WITH VALVE DYNAMIC FUNCTION GENERATION

Leaman B. Podolsky, Wilmington, Del.; Uri G. Ronnen, Monroeville, and Francesco Lardi, O'Hara Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 306,942, Nov. 15, 1972, abandoned. This application Dec. 30, 1977, Ser. No. 866,150

Int. Cl.² F01B *25/00*

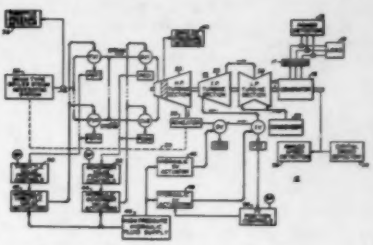
U.S. Cl. 290—40 R **25 Claims**

1. A control system for a turbine power plant wherein the valve lift position of each of a plurality of steam inlet valve means, each including at least one valve, is controlled to admit a selected portion of the total turbine steam flow through associated nozzle groups in accordance with a selected single or sequential mode of valve operation and the flow of steam through each of the valve means varies for a given valve lift position in accordance with the total flow of steam to the turbine, said system comprising:

means to generate an electrical representation in accordance with the total steam flow demand for the turbine;

means governed by a selected mode of operation and the total steam flow demand representation to generate an electrical representation of desired flow for each of the valve means;

calculating means including (a) means governed by the total flow demand representation to generate an electrical representation of steam flow versus valve lift position based upon the effect of pressure drop across the nozzles, (b) means governed by the electrical representation of



desired flow and the generated electrical representation of steam flow versus valve lift to generate for each respective valve means an electrical representation of valve position; and

means governed by the electrical representation of valve lift position to operate each of the valve means to a position repersentation corresponding to such valve lift position.

4,418,286

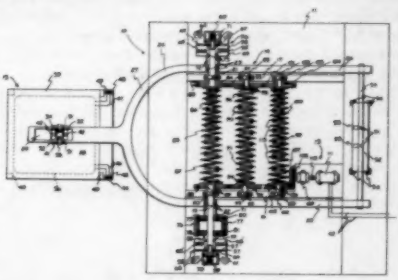
WAVE AND TIDAL ENERGY DRIVEN ELECTRIC GENERATOR

Lisbon Scott, 7920 Bi-County Rd., Apt. 10, Norfolk, Va. 23518

Filed Dec. 7, 1981, Ser. No. 328,199

Int. Cl.³ F03B *13/12*

U.S. Cl. 290—42 **8 Claims**



1. An electricity generating system using either wave or a combination of wave and tidal movement as a prime source of driving energy comprising: a wave energy transducer means; means operatively connecting said transducer to a tapered, superimposed primary energy storage spring means; a tapered, superimposed secondary energy storage spring means operatively connected to said primary energy storage means; an energy regulating spring means operatively connected to said secondary energy storage means; speed control means operatively associated with said means connecting said secondary energy storage means and said energy regulating means whereby a relatively constant RPM can be achieved; and a combination torque converter and speed reducer means operatively connecting said energy regulating means to an electrically generating means whereby wave and/or combined wave and tidal energy can be transferred to an energy storage means and released therefrom at a constant rate to drive an electricity generating means.

4,418,287

WIND POWER GENERATOR AND CONTROL THEREFORE

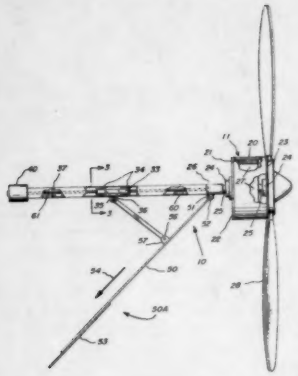
Charles D. Syverson, North Mankato, Minn., assignor to Power Group International Corporation, Houston, Tex.

Division of Ser. No. 950,009, Oct. 10, 1978. This application Nov. 20, 1981, Ser. No. 323,279

The portion of the term of this patent subsequent to Feb. 16, 1999, has been disclaimed.

Int. Cl.³ F03D 7/02

U.S. Cl. 290—44 **3 Claims**



1. An electric generator assembly adapted to be driven by the wind, including a support for retaining the generator assembly in a desired position, said generator assembly having an armature fixedly mounted on said support, a housing, bearing means to rotatably mount said housing directly on said support for rotation about a central axis, said housing having an outer mounting portion spaced radially outward from and overlapping at least a portion of said armature, permanent magnet means carried by said mounting portion of said housing for interacting with the armature to provide for generation of an electrical output from the armature upon rotation of the housing, means connected to said housing for rotation with said housing, and means for connecting a wind sensitive element thereto to provide wind powered rotation of said housing relative to the armature to produce an electrical output, and means connected to said armature for carrying electrical output from the armature.

4,418,288

ROTATION DETECTOR

Yutaka Imai; Jiro Nakano, and Motoharu Ezaki, all of Aichi, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota and Nippondenso Company Limited, Kariya, both of, Japan

Filed Jan. 27, 1982, Ser. No. 343,364

Claims priority, application Japan, Jan. 29, 1981, 56-11808

Int. Cl.³ H01H 35/00

U.S. Cl. 307—117 **11 Claims**

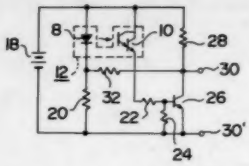
1. A rotation detector, comprising:

light emitting means adapted to be energized for emitting light;

light receiving means for sensing the light emitted from said light emitting means and providing output signals;

rotary means interposed between said light emitting means and said light receiving means, and adapted to be rotatably driven by a driving source, for causing the light emitted from said light emitting means to be sensed in intermittently interrupted states by the light receiving means; and

means, including switching means turned ON or OFF in response to signals outputted from said light receiving means, for increasing the luminous intensity of said light emitting means when said switching means is turned ON



and for decreasing the luminous intensity of said light emitting means when said switching means is turned OFF.

4,418,289

TWO STAGE STARTER DRIVE SYSTEM

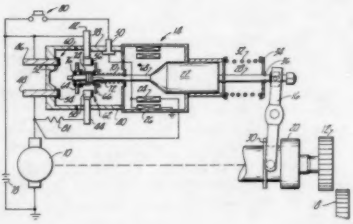
Harold R. Mortensen, Horseheads, N.Y., assignor to Facet Enterprises, Incorporated, Tulsa, Okla.

Continuation of Ser. No. 962,353, Nov. 20, 1978, Pat. No. 4,305,002. This application Jan. 8, 1981, Ser. No. 223,539

The portion of the term of this patent subsequent to Dec. 8, 1998, has been disclaimed.

Int. Cl.³ F02N 11/00

U.S. Cl. 307—142 **2 Claims**



1. In combination with an electrically activated device of the type having an external source of electrical power; and a solenoid actuator of the type having a pull-in coil energized by said external source of electrical power; a hold-in coil energized by said external source of electrical power; a resiliently biased armature; a dual mode power switch; and means for moving said armature from a first position to a second positon in response to said external source of electrical power energizing said pull-in and hold-in coils; the improvement comprising:

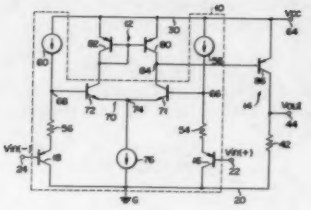
said dual mode power switch comprising two normally open electrical switches sequentially closed by said means for moving the armature of said solenoid actuator from said first position to said second position, the first of said two switches having an input terminal for receiving electrical power from the external electrical power source, and an output terminal, said first switch closing in response to said means for moving said armature so that the resiliently biased armature of the solenoid actuator is displaced to a predetermined intermediate position between said first and second position, said second of said two switches having an input terminal for receiving electrical power from the external source and an output terminal connected to the output of said pull-in coil and to the input terminal of said electrically activated device, said second switch closing in response to said armature having been moved to said second position by said moving means; and

a resistance having a predetermined value connected between the output terminal of said first switch and the input terminal of said electrically activated device.

4,418,290
VOLTAGE COMPARATOR

Katsumi Nagano, Hiratsuka, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed May 19, 1981, Ser. No. 265,236
Claims priority, application Japan, May 26, 1980, 55-69939
Int. Cl.³ H03K 5/24
U.S. Cl. 307—355 17 Claims



1. A voltage comparator comprising:

(a) input circuit means connected to a first potential line for receiving first and second electrical signals and providing an output current varying according to the voltage level difference between the first and second electrical signals, said input circuit means including:

(i) first and second transistors of one conductivity type each having an emitter, a base, and a collector electrode, the first and second electrical signals being respectively supplied to said base electrodes of said first and second transistors, and said collector electrodes being connected to said first potential line;

(ii) a differential pair formed by third and fourth transistors of the opposite conductivity type from that of said first and second transistors, said third and fourth transistors each having an emitter, a base, and a collector electrode, said emitter electrodes being connected to each other; and

(iii) first and second resistors connected respectively between said first transistor emitter electrode and said third transistor base electrode and between said second transistor emitter electrode and said fourth transistor base electrode; and

(b) a current-mirror circuit connected between a second potential line and said collector electrodes of said third and fourth transistors of said input circuit means; and

(c) output circuit means connected to said current-mirror circuit, for switching operation in response to the output current from said input circuit means to provide a third electrical signal corresponding to the voltage level difference between said first and second electrical signals, said output circuit means including a fifth transistor having an emitter, a base, and a collector electrode, said base electrode being connected directly to said collector electrode of either said third or said fourth transistor and the emitter-collector path of said fifth transistor being connected between said first and second potential lines.

4,418,291
LOGIC GATE HAVING AN ISOLATION FET AND NOISE IMMUNITY CIRCUIT

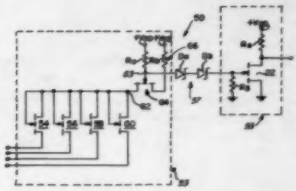
Richard B. Watson, Jr., Acton, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed May 28, 1980, Ser. No. 153,988
Int. Cl.³ H03K 19/003, 19/017, 19/094, 19/20
U.S. Cl. 307—443 10 Claims

1. A logic circuit comprising:

(a) input circuit means including: an input field effect transistor having an input terminal for coupling to a logic signal source and output terminal coupled to an intermediate terminal; and means for biasing such input transistor either to a relatively high conducting state or a relatively low conducting state selectively in accordance with the state of the logic signal source coupled to such input transistor, such input circuit means producing a predetermined voltage drop between the input terminal of the transistor and the intermediate terminal when such input transistor is biased to the relatively high conducting state;

(b) an output circuit means including: an output enhancement mode field effect transistor; and means for biasing such output transistor to the high conduction or low conduction state selectively in accordance with the level of a voltage fed to a gate electrode of such output transistor, such output transistor being biased to the low conducting state when such voltage level at the gate electrode is less than a threshold voltage of such output transistor;



(c) noise immunity circuit means, coupled between the intermediate terminal and the gate electrode of the output transistor, for providing a voltage drop between the intermediate terminal and the gate electrode of the output transistor sufficiently greater than the predetermined voltage drop provided by the input circuit means between the input terminal of the input transistor and the intermediate terminal to ensure that the output transistor is biased to the low conducting state;

(d) and wherein such input circuit means includes an additional field effect transistor having:

an input terminal connected to the output terminal of the input field effect transistor;

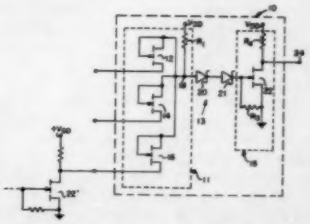
an output terminal coupled to a first current source;

a gate electrode connected to a second current source at the intermediate terminal.

4,418,292
LOGIC GATE HAVING A NOISE IMMUNITY CIRCUIT

Nicholas B. Cserhalmi, Melrose, and Arthur M. Cappon, Newton Centre, both of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed May 28, 1980, Ser. No. 154,154
Int. Cl.³ H03K 19/003, 19/017, 19/094, 19/20
U.S. Cl. 307—443 7 Claims



1. A logic circuit comprising:

(a) input circuit means including: an input field effect transistor having an input terminal for coupling to a logic signal source and output terminal connected to an intermediate terminal; and means for biasing such input transistor either to a relatively high conducting state or a relatively low conducting

state selectively in accordance with the state of the logic signal source coupled to such input transistor, such input circuit means producing a predetermined voltage drop between the input terminal of the transistor and the intermediate terminal when such input transistor is biased to the relatively high conducting state;

(b) an output circuit means including: an output field effect transistor; and means for biasing such output transistor to a high conduction or low conduction state selectively in accordance with the level of a voltage fed to a gate electrode of such output transistor, such output transistor being biased to the low conduction state when such voltage level at the gate electrode is less than a threshold voltage of such output transistor;

(c) noise immunity circuit means, coupled between the intermediate terminal and the gate electrode of the output transistor, for providing a voltage drop between the intermediate terminal and the gate electrode of the output transistor sufficiently greater than the predetermined voltage drop provided by the input circuit means between the input terminal of the input transistor and the intermediate terminal to ensure that the output transistor is biased to the low conducting state.

4,418,293

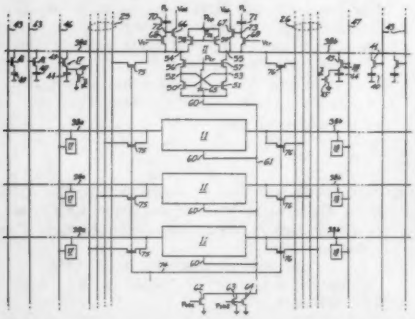
HIGH PERFORMANCE DYNAMIC SENSE AMPLIFIER WITH MULTIPLE COLUMN OUTPUTS

Joseph C. McAlexander, III, Sugar Land; Lionel S. White, Jr., and G. R. Mohan Rao, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Division of Ser. No. 944,822, Sep. 22, 1978, Pat. No. 4,239,993. This application Oct. 22, 1980, Ser. No. 199,397

Int. Cl.³ H03K *5/24*; G11C *7/06*

U.S. Cl. 307—530 **12 Claims**



1. A semiconductor memory device of the type having an array of rows and columns of memory cells at a face of a semiconductor body with each column split into two column line halves and having sense amplifiers connected to pairs of sense nodes at ends of each pair of column line halves, the columns being arranged in M groups of N columns where M and N are integers and M is greater than N, comprising:

a pair of cross-coupled driver transistors in each sense amplifier, and at least one grounding transistor, each of the transistors having a current path and a control electrode,

means connecting the current path of each one of the driver transistors separately between one of the sense nodes and a grounding node and connecting the current path of the grounding transistor between the grounding node and reference potential,

means for precharging the sense nodes to a voltage level prior to an active operating cycle,

means for addressing a selected row of the memory cells in the array at a given time in the beginning of said operating cycle,

means for applying a clock voltage to turn on said at least one grounding transistor at a first time subsequent to the said given time in the beginning of an active operating cycle,

a plurality of N pairs of column output lines running parallel to said rows of cells, each pair including a data line and a data line, and selectively-activated coupling means connecting each of said column output lines separately to one of said column line halves in each group, and column addressing means connected to said coupling means to activate said coupling means in one group at a time after said given time in an active operating cycle.

4,418,294

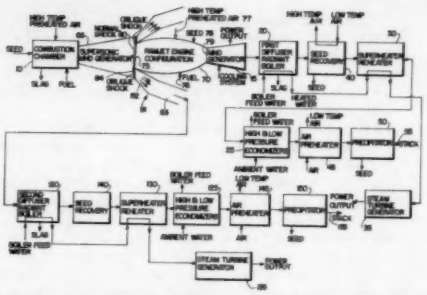
SUPERSONIC MHD GENERATOR SYSTEM

Muhammed A. Rahman, 1850 Columbia Pike, Apt. #129, Arlington, Va. 22204

Filed Jul. 2, 1982, Ser. No. 394,806

Int. Cl.³ H02K *44/00*

U.S. Cl. 310—11 **4 Claims**



1. An improved MHD power generating system of the type having a MHD topping cycle and a steam generating bottoming cycle and including a combustion system, at least one conventional MHD generator and a first radiant boiler in fluid communication with the secondary MHD generator, wherein the improvement comprises a first supersonic MHD generator and a ramjet engine operatively connected in series with said first supersonic MHD generator, said ramjet engine fluidly coupling said supersonic MHD generator with said conventional MHD generator for increasing the power output and improving the operating efficiency of the electric power generating system.

4,418,295

MULTI-PATH COOLING IN AC GENERATOR FOR VEHICLE

Tsutomu Shiga, Aichi, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Continuation of Ser. No. 194,603, Oct. 6, 1980, abandoned. This application Mar. 17, 1982, Ser. No. 358,901

Claims priority, application Japan, Oct. 9, 1979, 54-129429; Oct. 12, 1979, 54-131565

Int. Cl.³ H02K *9/06*

U.S. Cl. 310—59 **2 Claims**

1. An AC generator for vehicles comprising:

a housing including a generally cylindrical peripheral wall portion extending between end wall portions, each of said end wall portions having formed therein openings for air passage;

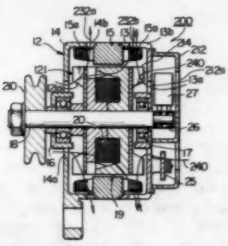
a stator assembly disposed within said housing and fixed to said cylindrical wall portion at a location between first and second spaced air outlet openings in the cylindrical wall portion, said stator assembly including a stator coil which at least partially overlaps said air outlet openings;

a rotor assembly disposed radially inwardly of said stator

assembly in spaced relationship therewith, the rotor assembly including a rotor shaft, a rotor coil, and a rotor core carrying said rotor coil, said rotor core being fixed to the rotor shaft for rotation therewith and comprising interleaved pole members which define a plurality of angularly separated fingers having therebetween axially extending spaces;

bearings for journaling said rotor shaft within the housing;

a first cooling fan secured to one end of said rotor core for rotation therewith, said fan including a substantially flat section disposed around said rotor shaft in contacting face-to-face relationship with said one end of the core and a plurality of vanes integral with the flat section, said vanes obliquely extending from the surface of said flat section at an angle in the range of 100 degrees to 150 degrees with respect to the flat section and being equal in number to the number of fingers of the rotor core, the vanes being disposed in substantially axial alignment with the spaces between said fingers and being arranged in overlapping relationship with one side portion of said stator coil, whereby during rotation of the rotor core, the



fan draws air through the openings in one of said end wall portions and directs the air (1) radially of the housing past said stator assembly and through the first air outlet opening in the cylindrical wall portion and (2) axially of the housing through the spaces between the rotor core fingers, and between the rotor and stator assemblies; and

a second cooling fan secured to the other end of said rotor core for rotation therewith, a substantially flat section of said second fan being disposed around said rotor shaft in contacting face-to-face relationship with said other end of the core, and a plurality of vanes integral with the flat section and arranged in overlapping relationship with the other side portion of said stator coil, whereby during rotation of the rotor core, the second fan draws air through the openings in the other of said end wall portions and directs this air, as well as that air axially directed by the first cooling fan through the spaces between the rotor core fingers and between the rotor and stator assemblies, radially of the housing past said stator assembly and through the second air outlet opening in the cylindrical wall portion.

4,418,296

MAGNETO-GENERATOR FOR ENGINE IGNITION SYSTEMS

Hans Ebentheuer, Nuremberg, and Adam Hirt, Ammerndorf, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Fed. Rep. of Germany

Filed Nov. 5, 1981, Ser. No. 318,685

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1980, 3043267

Int. Cl.³ H02K *11/00*; F02P *1/00*

U.S. Cl. 310—70 R **6 Claims**

1. A magneto-generator for engine ignition systems comprising:

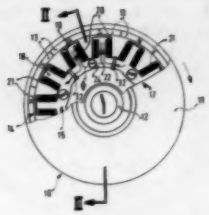
a cup-shaped revolving pole-wheel of magnetically soft material disposed for being driven by an engine;

a multiplicity of permanently magnetized magnet poles disposed around the inner rim of said pole-wheel in alternating sequence of polarity;

a stationary armature having an iron core (17) provided with substantially straight radial pole legs (18) extending in star configuration having their respective outer ends constituted as pole faces facing said magnet poles of said pole-wheel;

electric generator windings around said pole legs (18) for providing electrical energy for engine ignition and for other electric power consuming devices;

an inductive pulse generator affixed to said armature for generating ignition timing control pulses and constituted by an elongated core piece (25,27) extending from said



armature core towards the cup-bottom portion of said pole wheel and a winding around said core piece which is linked by the magnetic field of said pole-wheel,

said core piece (25) having one end (25*a*) adjoining said armature core (17) and affixed to a portion (22) thereof lying between two neighboring pole legs (18) of said armature core and said core piece also having its other end (27) extending axially towards the cup-bottom portion of said pole-wheel (11), and

a projection of magnetically soft material on said cup-bottom portion of said pole-wheel extending inwards for close approach once per pole-wheel revolution to said extending end (27) of said core piece (25).

4,418,297

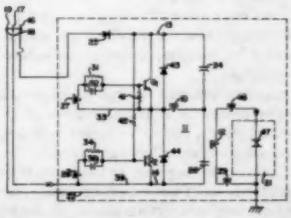
OSCILLATORY RESONANT TRANSDUCER DRIVER CIRCUIT

Patrick J. Marshall, Jefferson Lake, N.J., assignor to L & R Manufacturing Company, Kearny, N.J.

Continuation of Ser. No. 243,893, Mar. 16, 1981. This application Apr. 20, 1983, Ser. No. 485,383

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—316 **4 Claims**



1. In combination:

first and second signal responsive switches connected in series and provided with an output at the junction thereof;

a resonant load circuit including at least crystal transducer means connected to said output and driven by said first and second signal responsive switches, said crystal transducer means exhibiting changes in reactance as a function

of temperature, age and load and said resonant load circuit manifesting resonant characteristics including a changing resonant frequency over a sufficiently wide frequency range to accommodate said changes in reactance of said crystal transducer means; and

means for feeding back a signal associated with said resonant load circuit to alternately switch said first and second signal responsive switches, said means for feeding back maintaining a constant phase relationship between current and voltage over said range of frequencies and alternately switching said first and second signal responsive switches at substantially zero-crossover locations for reflected load current and current through said first and second signal responsive switches throughout said range of frequencies and substantially at any resonant frequency assumed within said range to achieve minimum power dissipation in said first and second signal responsive switches.

4,418,298

MOTOR SPEED CONTROL CIRCUIT

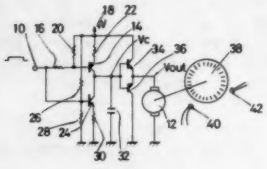
Hitoshi Suzuki, and Fusao Makino, both of Nara, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 13, 1981, Ser. No. 243,598

Claims priority, application Japan, Mar. 22, 1980, 55-37698

Int. Cl.³ H02P 5/16

U.S. Cl. 318—341 **5 Claims**



1. A motor speed control comprising:

a motor;

means for sensing the rotational speed of said motor;

means responsive to said sensing means for developing a motor speed pulse signal including a series of pulses having a pulse width which varies in response to the sensed rotational speed of said motor;

converting means responsive to said pulse signal produced by said developing means for developing a voltage signal having a voltage level corresponding to the pulse width of said series of pulses;

drive means responsive to said voltage signal produced by said converting means for amplifying said voltage signal and driving said motor, said drive means including,

first and second transistors having controlled terminals commonly connected together and to a first terminal of said motor, the bases of said transistors being commonly connected to said converting means to receive said voltage signal,

said first transistor applying a drive voltage to said first terminal to drive said motor,

said second transistor conducting to brake said motor by absorbtion of counter electromotive force when said voltage signal is at a level lower than the level indicative of the desired motor speed.

4,418,299

FACE-SHEAR MODE QUARTZ CRYSTAL VIBRATORS AND METHOD OF MANUFACTURE

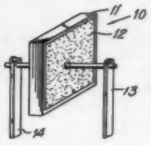
Eishi Momosaki, Owa Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 167,296, Jul. 10, 1980, abandoned, which is a continuation of Ser. No. 868,762, Jan. 12, 1978, abandoned. This application Sep. 29, 1982, Ser. No. 427,047

Claims priority, application Japan, Jan. 12, 1977, 52-2026; Jan. 19, 1977, 52-4729; Jan. 27, 1977, 52-8038; Oct. 26, 1977, 52-128409

Int. Cl.³ H01L 41/08

U.S. Cl. 310—361 **10 Claims**



1. A miniaturized quartz crystal vibrator comprising a rectangular face-shear mode quartz crystal plate having a long-side and a short-side dimension, said plate cut from a single quartz crystal less than 500 μm thick having two opposed principal substantially planar surfaces and four edge surfaces and metallic film electrodes disposed on at least a portion of said opposed planar surfaces, said quartz crystal plate being a Y-cut rotated about the X-axis from 45° to 55° and further rotated an angle of 45° from the X-axis, said quartz crystal plate being formed with a pair of holding portions integrally extending from the two opposed short-side edge surface with said holding portion extending along the long-side of said vibrator for supporting said quartz crystal vibrator and metallic film electrodes disposed on said holding portions.

4,418,300

METAL VAPOR DISCHARGE LAMP WITH HEAT INSULATOR AND STARTING AID

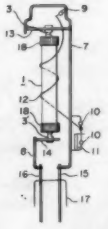
Katsuya Otani; Ryo Suzuki; Keiji Watanabe, and Michihiro Tsuchihashi, all of Kamakura, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 2, 1980, Ser. No. 193,018

Claims priority, application Japan, Jan. 17, 1980, 55-3914; Jan. 17, 1980, 55-3915

Int. Cl.³ H01J 61/30, 61/20, 61/54

U.S. Cl. 313—573 **7 Claims**



6. A metal vapor discharge lamp which comprises:

an arc tube having opposed ends and made of at least an oxide crystal;

a starting aid equipped on the outer circumference of said arc tube;

one end of said arc tube having a heat insulator to keep said one end warm, wherein the opposed end of the arc tube represents the coolest side thereof; and

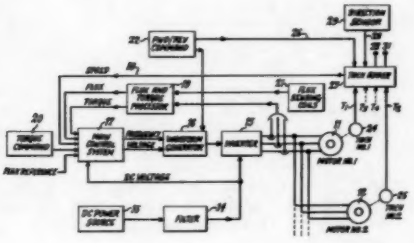
a rare gas enclosed at 100 Torr or above together with at least sodium and mercury in said arc tube, wherein said starting aid and an electrode at the coolest side of the arc tube are so arranged to have the same potential.

4,418,301

CIRCUIT FOR AVERAGING A PLURALITY OF SEPARATE MOTOR SPEED SIGNALS

Robert J. Griffith, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed May 12, 1982, Ser. No. 377,282
Int. Cl.³ H02P 5/00
U.S. Cl. 318—59 **14 Claims**



1. An electric propulsion system for a traction vehicle having a plurality of axle-wheels sets, comprising:

a. a plurality of adjustable speed, 3-phase a-c motors, each of said motors having stator windings and a rotor, with the rotors of the respective motors being mechanically coupled to separate axle-wheel sets of the vehicle;

b. a corresponding plurality of speed sensing means coupled to the rotors of the respective motors, each of said speed sensing means being arranged to supply a separate digital input signal having a frequency that varies with the angular velocity of the associated rotor;

c. means including a controllable electric power inverter for supplying 3-phase a-c power to the stator windings of all of said motors;

d. means for varying the fundamental amplitude of the a-c power supplied to said motors;

e. means responsive to an excitation frequency control signal for controlling the operation of said inverter so as to vary the fundamental frequency of said a-c power as desired;

f. means for developing said excitation frequency control signal and for varying the same as a function of the frequency of a digital speed feedback signal; and

g. said speed feedback signal being provided by a circuit including (i) first means connected to all of said speed sensing means for developing a single train of discrete output pulses having a frequency proportional to the sum of the frequencies of the digital input signals supplied by the respective speed sensing means, and (ii) second means responsive to said output pulses and to the number of said speed sensing means for producing a digital speed feedback signal having a frequency proportional to the frequency of said output pulses divided by the number of speed sensing means, whereby the frequency of said speed feedback signal is representative of the average angular velocity of the respective rotors of said motors.

4,418,302

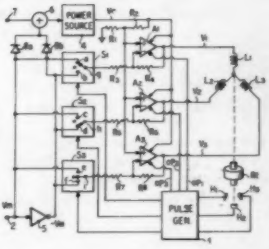
Patent Not Issued For This Number

4,418,303

DC MOTOR CONTROL CIRCUIT

Fumiyoshi Abe, Zama, and Takayuki Okafuji, Yokohama, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 22, 1982, Ser. No. 360,435
Claims priority, application Japan, Mar. 30, 1981, 56-46745
Int. Cl.³ H02K 29/02
U.S. Cl. 318—254 **9 Claims**



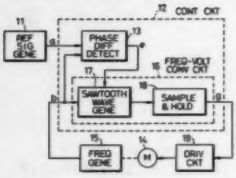
1. A DC motor control circuit for controlling the rotation of a DC motor comprising, a plurality of linear amplifiers, respectively connected to each stator windings of the DC motor, a pulse generator for generating rotational pulse trains which represent rotational phases of the rotor of said DC motor, an output impedance control pulse generator for generating in response to said rotational pulse train, control pulses for selectively controlling said plurality of linear amplifiers so they have almost infinite output impedances, a motor control voltage, a signal inverter for inverting said motor control voltage, a plurality of switching circuits respectively connected to the input circuits of said plurality of linear amplifiers for supplying said motor control voltage and said phase inverted motor control voltage selectively to each of said linear amplifiers, and a switching circuit control pulse gennerator, for generating, based on said rotational pulse train, switching pulses which are supplied to each of said switching circuits.

4,418,304

CIRCUIT FOR CONTROLLING ROTATION OF MOTOR

Hiroshi Iwai, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Apr. 7, 1981, Ser. No. 251,778
Claims priority, application Japan, Apr. 7, 1980, 55-45463
Int. Cl.³ H02P 5/16
U.S. Cl. 318—311 5 Claims



1. A circuit for controlling rotation of motor comprising:
rotational velocity signal generating means for generating a rotational velocity signal responsive to the rotational velocity of a motor whose rotation is to be controlled;
reference signal generating means for generating a reference signal;
phase comparing means for comparing the phases of said rotational velocity signal and said reference signal;
multiplexing means for multiplexing said rotational velocity signal and the output signal of said phase comparing means;
sample-and-hold means for sampling and holding the output multiplexed signal of said multiplexing means by said rotational velocity signal; and
controlling means for controlling the rotation of said motor by the output signal of said sample-and-hold means.

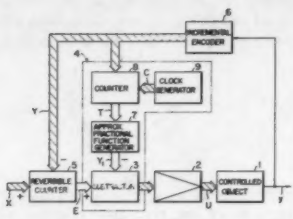
4,418,305

VELOCITY FEEDBACK CIRCUIT

Haruaki Otsuki, Shimoinayoshi, and Hiromu Hirai, Yatabemachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 14, 1981, Ser. No. 292,802
Claims priority, application Japan, Aug. 27, 1980, 55-117109
Int. Cl.³ G05B 5/01
U.S. Cl. 318—616 5 Claims

1. A velocity feedback circuit for a position servomechanism operative to control the position of a controlled object, said velocity feedback circuit comprising velocity calculating means responsive to a position signal applied from said position servomechanism for calculating the velocity to be fed back to the input of said position servomechanism, said velocity calculating means comprising first means for measuring the time required for said controlled object to make a predetermined change, second means for dividing the predetermined change



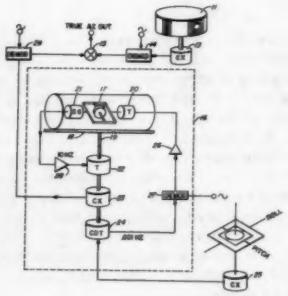
of said controlled object by the time measured by said first means, thereby calculating the velocity, and third means for subtracting the velocity calculated by said second means from the position signal applied from said position servomechanism.

4,418,306

DIRECTIONAL DATA STABILIZATION SYSTEM

Richard W. Samsel, Pittsfield, Mass., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 6, 1981, Ser. No. 319,153
Int. Cl.³ B64C 17/02
U.S. Cl. 318—648 24 Claims



1. A directional data stabilization system comprising:
a gimbal mounted instrumentality,
an inertial device aligned with an axis of said gimbal,
means to maintain the inertial orientation of said device,
means to provide an error signal proportional to the deviation of said device from inertial orientation,
a directional reference,
means to align said device with said directional reference,
and means to provide a signal proportional to the angle of said instrumentality from said device when said device is aligned with said reference.

4,418,307

METHOD AND APPARATUS FOR CONTROLLING THE ROTATIONAL SPEED AND PHASE OF SYNCHRONOUS MOTORS

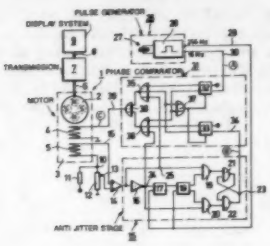
Harald Hoffmann, Kiel, and Dan-Corneliz Radocanu, Eberbach, both of Fed. Rep. of Germany, assignors to Braun Aktiengesellschaft, Kronberg, Fed. Rep. of Germany

Filed Sep. 16, 1980, Ser. No. 187,855

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1979, 2937838

Int. Cl.³ H02P 5/40

U.S. Cl. 318—721 4 Claims



1. Apparatus for controlling the rotational speed and phase of a synchronous motor having a rotor with at least one pair of poles and a stator with at least one field coil, to which acceleration driving or braking driving pulses are applied, comprising:

a sensor coil, having an output, coupled with the stator capable of being influenced by the rotor and for providing sensor signals of a frequency proportional to the rpm of the rotor;

comparator means, having an output, connected to said output of said sensor coil for converting said sensor signals into rectangular sensor pulses;

a pulse generator, having an output, for generating control pulses of constant frequency and width; and

a phase comparator means, having an output, and including means for generating driving pulses at said output, connected to the field coil, said driving pulses being synchronized with said sensor pulses, said phase comparator means being connected to said output of said comparator means and said output of said pulse generator, for comparing said sensor pulses with said control pulses as to phase and pulse width, wherein if a positive phase shift (poles lagging) results, accelerating driving pulses are generated of a time duration in proportion to that phase shift, if a negative phase shift (poles leading) results, braking driving pulses are generated of a time duration in proportion to that phase shift.

4,418,308

SCALAR DECOUPLED CONTROL FOR AN INDUCTION MACHINE

Bimal K. Bose, Latham, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 9, 1982, Ser. No. 406,589

Int. Cl.³ H02P 5/34

U.S. Cl. 318—803 7 Claims

1. An induction machine drive for achieving fast transient response, comprising:

a voltage fed inverter providing variable frequency a.c. power to the induction machine;

torque sensing means coupled to said machine for generating a signal indicative of actual machine torque;

first comparison means coupled to said torque sensing means for comparing a commanded torque signal to said signal indicative of actual machine torque to generate a commanded torque error;

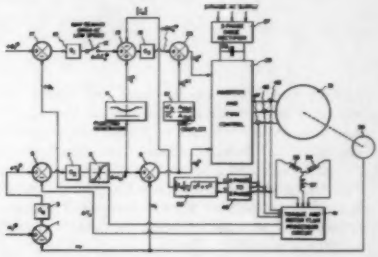
slip command generating means for generating a slip command from the commanded torque error;

a first function generator coupled to said slip generating means and being responsive to commanded slip for providing a stator current magnitude command to maintain rotor flux constant during steady state condition at a predetermined value dependent on a predetermined relationship between slip and stator current, said stator current magnitude command providing a torque producing component;

stator current measuring means coupled to said induction machine for generating a signal indicative of actual stator current;

second comparison means coupled to said stator current measuring means and to said first function generator for comparing commanded stator current with actual stator current to generate a stator current error signal;

stator voltage command signal generating means responsive to said stator current error signal for generating a first stator voltage command signal;



signal generating means responsive to rotor speed of said machine for generating a signal indicative of actual rotor speed;

first summation means coupling said slip command generating means and signal generating means to said inverter, said first summation means adding said slip command to said actual rotor speed to generate a stator frequency command for said inverter;

a second function generator coupled to said summation means and being responsive to changes in commanded stator frequency for generating a decoupling signal to compensate said first stator voltage command to maintain rotor flux constant at said predetermined value during transient conditions due to changes in the commanded machine stator frequency; and

second summation means coupling said second function generator and said stator voltage command signal generating means to said inverter, said second summation means adding the decoupling signal from said second function generator to said first stator voltage command signal for supplying a compensated stator voltage command signal to said inverter.

4,418,309

TWO PHASE INDUCTION MOTOR CIRCUIT WITH SERIES CONNECTED CENTER-TAPPED STATOR WINDINGS

Peter G. Bartlett, Davenport, Iowa, assignor to Automation Systems, Inc., Eldridge, Iowa

Filed Jul. 13, 1982, Ser. No. 397,929

The portion of the term of this patent subsequent to Jan. 14, 1998, has been disclaimed.

Int. Cl.³ H02P 5/28

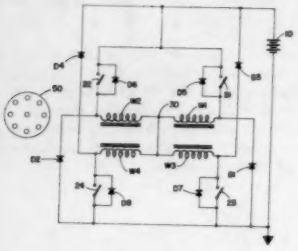
U.S. Cl. 318—818 5 Claims

1. An induction motor circuit comprising:

(a) a power source, having a first voltage terminal and a second, more positive, voltage terminal;

(b) first, second, third, and fourth switch means;

(c) first, second, third, and fourth induction motor stator windings, each of said windings having one end connecting to the other said windings; the other ends of said first and second windings being switchably connected to said second voltage terminal through said first and second switch means respectively; the other ends of said third and fourth windings being switchably connected to said first voltage terminal through said third and fourth switch means;



(d) a first diode and a second diode, said diodes connecting the other ends of said first and said second windings with said first voltage terminal respectively; the anodes of said diodes being connected to said first voltage terminal;

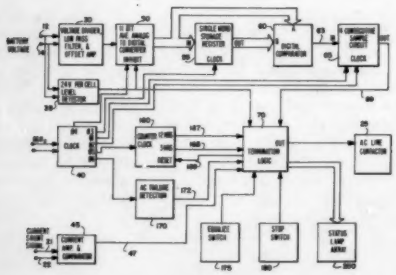
(e) a third diode and a fourth diode, said diodes connecting the other ends of said third winding and said fourth winding with said second voltage terminal respectively; the cathodes of said diodes being connected to said second voltage terminal.

4,418,310

BATTERY CHARGER CONTROL CIRCUIT

David D. Bollinger, Troy, Ohio, assignor to Hobart Brothers Company, Troy, Ohio

Filed Nov. 18, 1981, Ser. No. 322,333
Int. Cl.³ H02J *7/04*
U.S. Cl. 320—39 **4 Claims**



1. An automatic battery charging apparatus including,

means for providing a source of regulated electrical current for charging a battery,

means for sensing the battery voltage at regular intervals, said means including an analog to digital converter providing a digital output representative of average battery voltage taken over a predetermined period of time,

means for comparing successive average battery voltage readings,

means responsive to a predetermined number of consecutive comparisons where the present battery average differs from the previous average battery voltage by less than a predetermined amount for generating a control signal, and

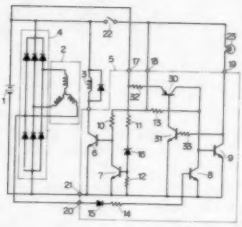
means responsive to said control signal for disconnecting said source of charging current from said battery.

4,418,311

BATTERY CHARGE INDICATING SYSTEM

Koshi Torii, Iwakura; Toshinori Maruyama, Kariya; Yoshio Akita, Chiryu, and Takanori Teshima, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jan. 8, 1982, Ser. No. 338,056
Claims priority, application Japan, Feb. 18, 1981, 56-21421
Int. Cl.³ H02J *7/24*
U.S. Cl. 320—48 **13 Claims**



1. A battery charge indicating system comprising:

an alternating current generator including output windings, a field winding and a full-wave rectifier connected to said output windings for rectifying the output therefrom;

a battery connected to said generator and charged thereby;

a voltage regulator unit connected to said generator and said battery for controlling the output of said generator in response to the battery voltage;

indicating means connected to said battery through an ignition key switch;

wherein said voltage regulator unit includes;

power switching means connected to said battery through said field winding;

voltage sensing means connected to said battery through a first terminal of said voltage regulator unit;

a current supplying line, connected to said battery through a second terminal of said voltage regulator unit and said ignition key switch, for supplying a current to said power switching means when said voltage sensing means senses that the voltage of said battery is lower than a preset value;

driving means, connected to said battery thrugh said indicating means and said ignition key switch and through a third terminal of said voltage regulator unit, for driving said indicating means;

detecting means connected to said battery through said third terminal for detecting a closed condition of said ignition key switch; and

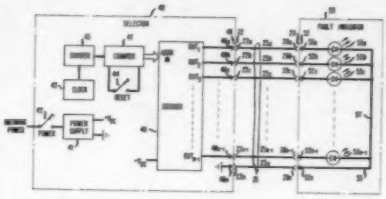
switching means connected to said battery through said first terminal and to said detecting means for supplying a signal to said driving means in response to an output of said detecting means indicative of the closed condition of said ignition key switch;

said driving means being also connected to said generator and driving said indicating means when said generator is not generating its output and said driving means is supplied with said signal from said switching means.

4,418,312
APPARATUS FOR TESTING MULTI-CONDUCTOR CABLES

Bernard A. Figler, Aberdeen Township, Monmouth County, and Charles M. Fingerman, Manchester Township, Ocean County, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Oct. 23, 1981, Ser. No. 314,245
Int. Cl.³ G01R 31/08
U.S. Cl. 324—52 **4 Claims**



1. Apparatus for testing a cable, having two ends and n separate conductors, for conduction faults associated with each of said conductors comprising

means at one end for establishing a conduction path between all of n—1 conductors of said n conductors and a remaining one of said n conductors,

means at the other end for sequentially establishing a conduction path between each of said n—1 conductors and the remaining conductor whereby loops comprised of each of said n—1 conductors and said remaining conductor are sequentially produced,

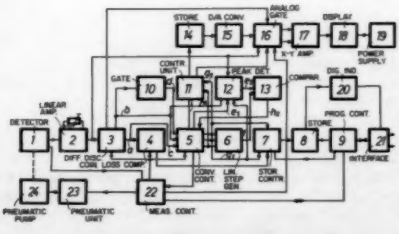
means for causing test current to flow around each of said loops, and

means connected to each of said n—1 conductors at said one end of said cable and responsive to the test current flowing through each said loop for indicating any conduction faults associated with any of the n conductors.

4,418,313
PROCESS AND CIRCUIT ARRANGEMENT FOR THE DETERMINATION IN A DILUTED BLOOD SAMPLE OF THE NUMBER OF RED BLOOD CORPUSCLES, THE MEAN CELL VOLUME, THE VALUE OF HAEMATOCRIT AND OTHER BLOOD PARAMETERS

Laszlo Cserey; Pal Vimlati, and Pal Zillich, all of Budapest, Hungary, assignors to Medicor Müvek, Budapest, Hungary

Continuation of Ser. No. 58,132, Jul. 17, 1979, abandoned, which is a continuation of Ser. No. 770,824, Feb. 22, 1977, abandoned.
This application Sep. 8, 1981, Ser. No. 300,383
Claims priority, application Hungary, Feb. 24, 1976, ME 1955
Int. Cl.³ G01N 27/00
U.S. Cl. 324—71.1 **4 Claims**

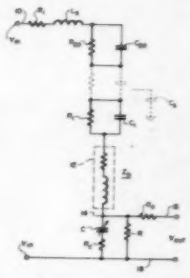


1. In a device for examining the size of particles suspended in a liquid, having a measurement aperture traversed by the suspension and two electrodes arranged in the region of the measurement aperture and connected to evaluation circuitry, each of which electrodes produces one pulse per particle passing therethrough, the amplitude of which pulse is a measure of the volume of the particle, the improvement comprising a differential discriminator for the pulse amplitudes to determine the maximum amplitude of a pulse coming from a single particle and discriminating means connected in front of the evaluation circuitry, the discriminating means permitting the passage of only pulses whose duration is less than the duration of a pulse coming from a single particle which has a maximum amplitude determined by the differential discriminator.

4,418,314
HIGH IMPEDANCE FAST VOLTAGE PROBE

Alfonso Nieto, Jr., Yorba Linda, Calif., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 20, 1980, Ser. No. 198,557
Int. Cl.³ G01R 31/02
U.S. Cl. 324—72.5 **3 Claims**



1. A probe comprising a cylindrical outer conductor, a circuit board mounted within said outer conductor, said circuit board being of a material having a low relative dielectric constant which is metal clad etched to provide pads for mounting components and making connections, several chip resistors in series mounted longitudinally along the center of said circuit board, several chip capacitors also mounted longitudinally along the center of said circuit board with each said chip capacitor connected in parallel with one of said chip resistors, an input probe conductor connected to one end of said circuit board, an input resistor mounted on the circuit board in series between the input probe conductor and said chip resistors and chip capacitors, ferrite bead means connected in series with the chip resistors and chip capacitors along the center of the circuit board to a junction, output means having a center conductor and a ground conductor, an output resistor connected between said junction and the center conductor of the output means, a variable capacitor in series with a resistor connected between said junction and the ground conductor, and a shunt resistor connected between said junction and the ground conductor.

4,418,315
METHOD FOR EFFECTING A SURFACE EXAMINATION OF COATED COMPONENTS

Lawrence J. Edwards, Suffield, and John P. Lareau, Granby, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

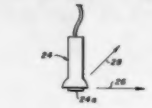
Filed May 22, 1981, Ser. No. 266,397
Int. Cl.³ G01R 35/00
U.S. Cl. 324—202 **6 Claims**

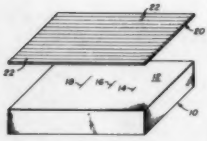
1. A method for effecting a surface examination of a coated metal component to detect defects in the surface thereof without requiring that the coating be removed from the component

for purposes of conducting the surface examination comprising the steps of:

a. providing a calibration block embodying characteristics similar to the component that is to undergo the surface examination and having a plurality of crack-like notches formed in a surface thereof, one of the plurality of crack-like notches embodying the same dimension as the minimal dimensioned crack desired to be detected in the component that is to undergo the surface examination;

b. providing a layer-like film of nonmetallic material embodying characteristics similar to the coating borne by the component that is to undergo the surface examination, the layer-like film of nonmetallic material comprises a plastic sheet-like member having a plurality of parallelly extending scribe lines provided thereon, the spacing between the adjoining ones of the multiplicity of scribe lines being such as to cause a reading to be provided of fifty percent of the value of the reading obtained from the minimal dimensioned crack-like notch when the eddy current means is moved along each of an adjoining pair of scribe lines;





c. positioning the plastic sheet-like member in superimposed relation on the calibration block so as to cover the plurality of crack-like notches formed in the calibration block;

d. establishing with eddy current means calibration readings from the calibration block having the plastic sheet-like member positioned in superimposed relation thereto;

e. performing a surface examination of the coated metal component with the eddy current means by moving the eddy current means over the surface of the coated metal component in a traversing pattern corresponding to the pattern defined by the plurality of scribe lines provided on the sheet-like member; and

f. comparing the readings obtained from the surface examination of the coated metal component with the calibration readings obtained from the calibration block to establish the presence of any cracks of at least a minimal dimension in the surface of the coated metal component.

4,418,316

NUCLEAR MAGNETIC RESONANCE APPARATUS

Ian R. Young, Sunbury-on-Thames; Godfrey N. Hounsfield, Newark, and Michael Burl, Iver, all of England, assignors to Picker International Limited, Wembley, England

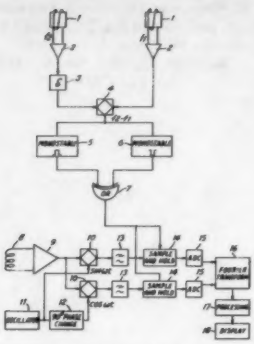
Filed May 19, 1981, Ser. No. 265,152

Claims priority, application United Kingdom, May 21, 1980, 8016807

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—309 **9 Claims**

1. An nuclear magnetic resonance apparatus using a field gradient to produce phase dispersion of resonating nuclei in a selected region of a body and including, a sampling arrangement for determining times of sampling signals produced by said nuclei, which times are spaced such that the gradient field integral in each interval between sampling times is substantially equal, said arrangement including two NMR probes displaced in the direction of said gradient to produce NMR signals at frequencies representing the fields at their respective positions, means for determining the phase difference between



signals from the probes and means for producing a sampling signal each time the phase difference attains a predetermined value.

4,418,317

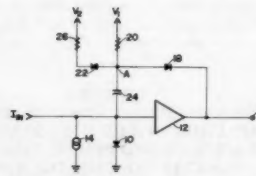
LOGARITHMIC AMPLIFIER UTILIZING POSITIVE FEEDBACK

Glenn Bateman, Aloha, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed May 18, 1981, Ser. No. 264,521

Int. Cl.³ G06G *7/24*

U.S. Cl. 328—145 **6 Claims**



1. A non-linear amplifier, comprising:

an amplifier stage having an input and an output;

a non-linear element coupled between said input and a reference potential level;

a constant current source coupled to said input; and

a feedback network coupled from said output to said input for providing positive feedback from said output to said input when the input signal is less than a predetermined value.

4,418,318

DIGITAL PHASE-LOCKED LOOP CIRCUIT

Arnold Swagerty, Vienna, Va., and William A. Mitchell, Fairplay, Md., assignors to Frederick Electronics Corporation, Frederick, Md.

Filed Mar. 10, 1981, Ser. No. 242,245

Int. Cl.³ H03L *7/08*

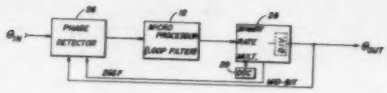
U.S. Cl. 328—155 **4 Claims**

1. A digital phase-locked loop for controlling a digital output signal having time periods to track both as to its frequency and its phase a digital input signal having successive time intervals which defines a transmission frequency for said input signal, said input signal being in one of two possible logic states in each time interval, comprising:

(a) a phase detector responsive to said input and output

signals, for detecting in the time intervals the phase difference therebetween;

(b) a microprocessor responsive to the detected phase differences for generating for each interval a frequency select code to control the frequency of said output signal, the frequency select code for each interval including a phase shift correction component generated only from the measured phase difference for that interval if a phase difference measurement is obtained and a frequency correction component generated from all the measured phase differences; and



(c) a binary rate multiplier responsive to the frequencies select code, for generating said output signal, the frequency select codes generated by said microprocessor controlling the frequency of said output signal on an interval-by-interval basis to cause the phase difference detected in successive intervals by said phase detector to approximate zero thereby locking the phase and frequency of said output signal to the phase and transmission frequency of said input signal.

4,418,319

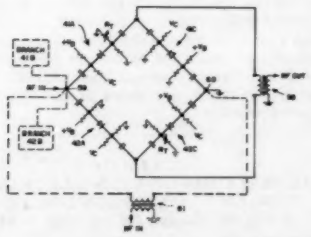
SIGNAL PROCESSING PRODUCT CIRCUITRY

Paul F. Mahoney, Brighton, and Jerrold L. Bonn, Waltham, both of Mass., assignors to Signatron, Inc., Lexington, Mass.

Continuation-in-part of Ser. No. 103,347, Dec. 13, 1979, Pat. No. 4,352,029. This application Jul. 7, 1982, Ser. No. 396,047

Int. Cl.³ H03K *3/26*; G06G *7/16*

U.S. Cl. 328—160 **18 Claims**



1. A bridge circuit having four branches, first and second input terminals and first and second output terminals, said circuit for processing a first signal and a second signal,

each branch of said bridge circuit including

a current controllable resistance means having a first and second terminal; and

capacitance means for providing d-c isolation thereof;

first input circuit means for applying said first signal as an input signal to at least one of said first and second input terminals of said bridge circuit;

bias circuit means for applying the same bias voltage to the first terminal of the current controllable resistance means of each of said branches;

second input circuit means for applying said second signal to the first terminal of the current controllable resistance means of a first pair of opposite branches of said bridge circuit and to the second terminal of the current controllable resistance means of the other pair of opposite branches of said bridge circuit;

output circuit means responsive to the signals at the first and second output terminals of said bridge circuit for combining said signals to produce an output signal which is the product of said first signal and said second signal.

4,418,320

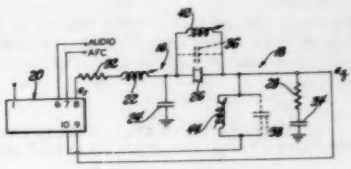
HIGH FREQUENCY DISCRIMINATOR WITH A CRYSTAL PHASE SHIFT NETWORK

James H. Guyton, 217-A Bobolink Way, Naples, Fla. 33942

Continuation of Ser. No. 141,730, Apr. 18, 1980, abandoned. This application Sep. 17, 1982, Ser. No. 419,264

Int. Cl.³ H03D *3/16*

U.S. Cl. 329—118 **6 Claims**



1. For use in developing an audio voltage in a receiver for angle modulated waves, said receiver including signal developing means for developing a signal voltage in the frequency range of at least several Mhz which is deviated about a center frequency by a deviation of several Khz in accordance with the modulation of the modulated wave; a discriminator circuit of the type adapted to combine the signal voltage and a quadrature voltage and having an input adapted to be coupled with said signal developing means, a crystal phase shift network in the discriminator circuit including a piezoelectric crystal and additional reactance means including distributed capacitance, said crystal with the additional reactance means having a reactance which is linearly proportional to signal deviation from center frequency, said phase shift network also including, in series with said crystal, a series impedance comprising reactance which includes distributed capacitance, the series impedance being resistance, said crystal being resonant at a frequency within a few Khz of said center frequency, whereby a modified signal voltage is produced across said series impedance, said modified signal voltage having a phase shift relative to said signal voltage which is linearly proportional to the deviation of said signal voltage frequency from said center frequency and means coupled with the crystal phase shift network for shifting the phase of the modified signal voltage by an additional 90° to produce said quadrature voltage, whereby said quadrature voltage is in quadrature phase relation with said signal voltage when the signal voltage is at said center frequency.

4,418,321

FEEDBACK AMPLIFIER OR THRESHOLD VALUE SWITCH FOR A CURRENT FEED DIFFERENTIAL STAGE

Rolf Böhme, Bad Friedrichshall, Fed. Rep. of Germany, assignor to Telefunken Electronic GmbH, Heilbronn, Fed. Rep. of Germany

Filed Aug. 26, 1981, Ser. No. 296,484

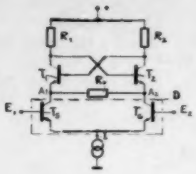
Claims priority, application Fed. Rep. of Germany, Aug. 30, 1980, 3032703

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—252 **6 Claims**

1. A feedback amplifier including a current-fed differential stage having first and second outputs, said feedback amplifier additionally comprising a first transistor having an emitter connected to the first output of the differential stage; a second transistor having an emitter connected to the second output of the differential stage; a first resistor connected between both the outputs of the differential stage; a source of supply voltage; and second and third resistors comprising operating resistors

connected between said supply voltage source and said two transistors, wherein said second resistor is connected to the



collector of said first transistor and the base of said second transistor, and said third resistor is connected to the collector of said second transistor and the base of said first transistor.

4,418,322

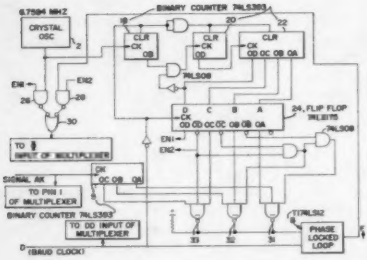
AUTOMATIC DIGITAL CIRCUIT FOR SYNCHRONIZING WITH A VARIABLE BAUD RATE GENERATOR

Paul S. Chang, Harrisburg, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 137,038, Apr. 3, 1980, abandoned. This application Feb. 5, 1982, Ser. No. 345,964

Int. Cl.³ H03L *7/18*

U.S. Cl. 331—1 A **4 Claims**



1. A digital feedback circuit for synchronizing an oscillator output frequency with a signal input from a variable Baud Rate Clock in order to maintain a fixed input to output frequency ratio, comprising:

first binary means connected to a voltage controlled oscillator having an output frequency for counting down at a rate determined by said voltage controlled oscillator output frequency, and having sequentially activated divider outputs for binary division of said output frequency;

a system clock generating a system clock signal at a preset bit frequency;

second binary means counting down said system clock signal for a period determined by said Baud Rate Clock period;

means for registering the count of said second binary counting means

logic means responsive to said registering means for selecting an output from said first binary counting means;

means for connecting the output of said voltage controlled oscillator to an output terminal; and

means for comparing phase differential between said selected output of said first binary counting means and said signal input from said variable Baud Rate Clock and generating a voltage level based upon any phase differential therebetween for adjusting said voltage controlled oscillator output frequency.

4,418,323

OSCILLATOR HAVING CAPACITOR CHARGED AND DISCHARGED BY CURRENT MIRROR CIRCUITS

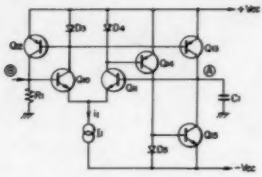
Akio Tokumo, and Yoshiro Kunugi, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Mar. 5, 1981, Ser. No. 240,686

Claims priority, application Japan, Mar. 7, 1980, 55/28838; Mar. 7, 1980, 55/28839; Mar. 10, 1980, 55/29216

Int. Cl.³ H03K *3/282*

U.S. Cl. 331—111 **10 Claims**



1. An oscillator circuit comprising: a differential amplifier having a first transistor receiving a first differential amplifier input and providing a first differential amplifier output and a second transistor receiving a second differential amplifier input and providing a second differential amplifier output, said differential amplifier being operable in a first state wherein a predetermined current flows in said first transistor and a second state wherein said predetermined current flows in said second transistor; first and second current mirror circuits coupled to said first output of said differential amplifier for conducting currents equivalent to that flowing in said first transistor; a third current mirror circuit coupled to said second output of said differential amplifier for conducting a current equivalent to that flowing in said second transistor; a fourth current mirror circuit coupled to an output of said third current mirror for conducting a current equivalent to that flowing in said third current mirror circuit; and a capacitor coupled to said second differential amplifier input and coupled to be charged by current flowing through said second current mirror circuit and discharged by current flowing through said fourth current mirror circuit and wherein an output of said first current mirror circuit is coupled to said first input of said differential amplifier.

4,418,324

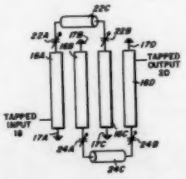
IMPLEMENTATION OF A TUNABLE TRANSMISSION ZERO ON TRANSMISSION LINE FILTERS

Robert J. Higgins, Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 31, 1981, Ser. No. 336,475

Int. Cl.³ H01P *1/203, 7/08, 3/08*

U.S. Cl. 333—204 **3 Claims**



1. A transmission fine filter having at least three poles and one zero in its frequency transfer function, said filter comprising;

a row of a plurality of conductive strips which define resonators having at least three poles;

a conductive grounded surface spaced from said row of a

plurality of conductive strips with said conductive grounded surface cooperating with said plurality of conductive strips to form a transmission line filter; and

a transmission zero means capacitively coupled to at least two of said plurality of conductive strips with said frequency zero means being a conductive transmission line etched out of said conductive grounded surface.

4,418,325

SUPPORT STRUCTURE FOR TRANSMITTING LARGE FORCES

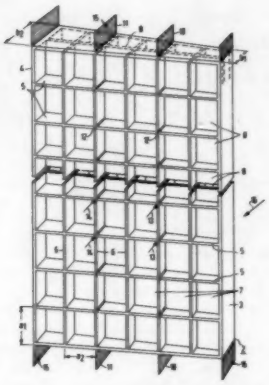
Werner Elsel, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Jul. 10, 1981, Ser. No. 281,935

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1980, 3027616

Int. Cl.³ H01F *1/00*; F24H *3/00*

U.S. Cl. 335—216 **11 Claims**



1. In a support structure, for transmitting large forces, between a superconducting magnet winding cooled to a low temperature and an abutment which is at a higher temperature level and takes up the forces, including support elements which point at least approximately in the direction of the force transmission, stiffening elements attached, between the support elements and at least one sheet-like heat shield, the improvement comprising:

all support elements having the shape of sheets and arranged in a honeycomb-like structure;

at least one plane of stiffening elements forming the heat shield; and

a coolant conducted through cooling canals holding said at least one plane at a predetermined intermediate temperature.

4,418,326

MEASURING DEVICE USING A STRAIN GAUGE

Gilles Delapierre, Seyssinet, France, assignor to Commissariat a L'Energie Atomique, Paris, France

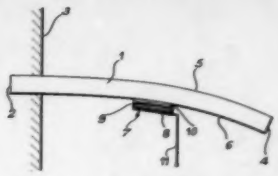
Filed Nov. 12, 1981, Ser. No. 320,183

Claims priority, application France, Nov. 20, 1980, 80 24656

Int. Cl.³ G01L *1/22*

U.S. Cl. 338—5 **11 Claims**

1. A device for measuring a variable quantity comprising a test body which can deform under the action of the quantity to be measured, wherein the said test body has at least one strain gauge, the latter having a metallic coating which is sensitive to



deformations fixed to a so-called pellicular thin glass support, the thickness of the latter being between 60 and 400 μm.

4,418,327

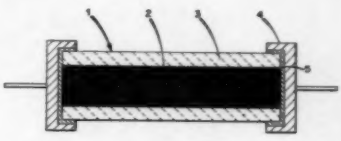
ARC LIMITING REFRACTORY RESISTIVE ELEMENT

Frank C. Palilla, Framingham, Mass.; Burton W. MacAllister, Jr., Hudson, N.H., and John F. McKenna, Newburyport, Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass. and GTE Prods. Corp., Stamford, Conn.

Filed Sep. 17, 1981, Ser. No. 303,316

Int. Cl.³ H01C *1/012*

U.S. Cl. 338—309 **9 Claims**



1. An arc limiting refractory resistive element comprising:

a body of polycrystalline aluminum oxide having an electrically conductive inner region and an electrically non-conductive outer region;

said inner region consisting essentially of polycrystalline aluminum oxide, from about 0.3 weight percent to about 1.0 weight percent of an electrically conductive refractory material distributed relatively uniformly throughout said polycrystalline aluminum oxide in said inner region, and a sintering aid, and

said outer region consisting essentially of polycrystalline aluminum oxide, and said sintering aid,

said body having less than about 0.2 weight percent of said sintering aid.

4,418,328

METHOD OF MANUFACTURING A BALLAST RESISTOR SUPPORT MEMBER AND FINISHED ARTICLE

Frederick Hetzel, Brookpark, and William G. McCracken, Jr., Highland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

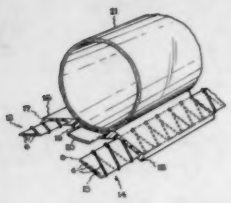
Filed Mar. 27, 1981, Ser. No. 248,550

Int. Cl.³ H01C *7/10*

U.S. Cl. 338—20 **3 Claims**

1. A ballast resistor for a gas discharge lamp unit comprising a resistive wire helically wound around a reinforced insulative strip to exhibit a relatively uniform resistance over the length of said wound resistive wire, said reinforced insulative strip comprising a plurality of separated and substantially parallel

reinforcing strands embedded between substantially flat strips of insulative thermoplastic material which are extruded and



thereafter compressed together sufficiently to form a bond therebetween.

4,418,329

FAST-RESPONSE TEMPERATURE SENSOR

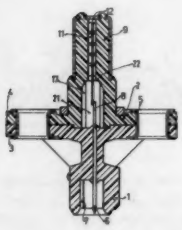
Heiko Gruner, Gerlingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 17, 1982, Ser. No. 359,122

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1981, 3111948

Int. Cl.³ H01C *7/02*

U.S. Cl. 338—28 **2 Claims**



1. Fast-response temperature sensor, particularly for use with an internal combustion engine, having

a housing (**1, 2, 9, 10**) defining an air duct and a cavity (**17**) therein, joined to the air duct;

apertures (**11**) formed in the housing and extending therethrough and communicating with the air duct;

connecting terminals (**6, 8**) secured in the housing;

a thermal-electrical elongated sensing element positioned in the cavity and secured in the housing, comprising

an insulating carrier (**12**) extending into the air duct and into the cavity;

a temperature-sensitive resistance track (**13**) deposited on the carrier and having connection means (**14**) for connection of the resistance track to the terminal (**6, 8**), said temperature-sensitive resistance track being located adjacent an end portion of the insulating carrier and arranged in meander shape; wherein

the resistance track comprises a thin-film track arrangement having a predetermined longitudinal extent (**19**);

connection tracks (**15, 16**) are provided, having a length (**24**) at least as long as said predetermined longitudinal extent (**19**) extending from one end portion of said meander-shaped track arrangement to the connection means (**14**);

and two protective coatings (**20, 21**) are provided, applied, respectively, in longitudinally staggered, and mutually overlapping position on the insulating carrier and over said track arrangement and the connection means;

a first one of said coverings (**20**) covering said meander-shaped track arrangement and a major portion of the connection means (**15, 16**) and consisting of an epoxy resin of about 5 μm thickness;

and the second (**21**) of said coverings comprising an epoxy resin casting compound compatible with the first covering (**20**) and filling said cavity (**17**), said second covering extending over the connection means and the adjacent portions of the terminals secured thereto and forming a holding and attachment body to secure the insulating carrier in the housing;

and wherein the longitudinal extent is at least twice the distance (**23**) between the boundary line (**22**) of overlap of the second covering (**21**) over the first covering (**20**).

4,418,330

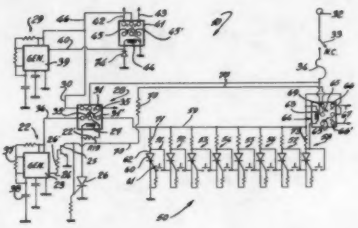
ELECTRONIC SEQUENTIAL COMBINATION LOCKING DEVICE

Stephen Kamichik, 1460 Montcalm St., Chomedey, Quebec, Canada

Filed Sep. 4, 1981, Ser. No. 299,328

Int. Cl.³ B60R *25/04*

U.S. Cl. 340—64 **11 Claims**



1. An electronic sequential combination locking device comprising a main switch, a timer circuit connected to said main switch through a first relay device, said timer circuit being activated by said main switch to provide a timer output signal after a predetermined time lapse, an electronic switching element connected to receive said timer output signal, alarm means connected to said electronic switching element and operable by said timer output signal, a combination lock circuit having a plurality of manually actionable switch circuits operable in a predetermined sequence to activate a second relay device and disable said electronic switching element through a feedback connection between said first and second relay devices, said electronic switching element when activated by said timer output signal after said time lapse applying power to said first relay device which activates said alarm means and disables said combination lock circuit, said second relay device providing a supply to an ignition circuit of an automobile, said second relay device having two sets of contacts through which power is supplied to said ignition circuit when said second relay device is activated and said alarm means is simultaneously disabled.

4,418,331

MANUALLY OPERATED DEACCELERATION WARNING SYSTEM WITH VACUUM CONTROLLED OVERRIDE

Gustave J. Chicoine, 1052 Cumberland Pl., San Jose, Calif. 95125

Continuation-in-part of Ser. No. 131,158, Mar. 17, 1980, abandoned. This application Jan. 15, 1982, Ser. No. 339,751

Int. Cl.³ B60Q *5/00;* **G08B** *21/00*

U.S. Cl. 340—72 **10 Claims**

1. A warning system for downshifting deacceleration of vehicles having an internal combustion type engine with an intake manifold vacuum responsive to acceleration and deacceleration, the warning system having a hand operated control loop which is automatically enabled and disabled in response

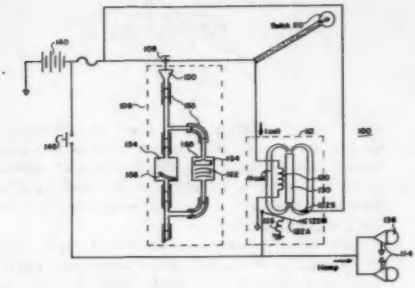
to the manifold vacuum force, and a lamp operating loop which is separated from the control loop by an isolation relay therebetween, comprising:

a control loop;

a control power source means for providing control current to the control loop;

vacuum operated mode controller means connected in the control loop and automatically responsive to variations in the manifold vacuum force for enabling the warning system by permitting control current to flow in the control loop, and for disabling the warning system to override the hand operation by preventing control current to flow in the control loop;

a normally open, push-to-close, hand operated switching means mounted on the downshift control lever and connected in the control loop for initiating the flow of control current through the control loop during downshift deacceleration warning when the the warning system is enabled by the mode controller and the hand operated switching means is closed by the operator, and for terminating the flow of control current through the control



loop when the hand operated switching means is released to open by the operator;

an isolation relay coil connected in the control loop, and responsive to control current flowing through the control loop during downshift deacceleration warning for generating a magnetic field;

an operating loop;

an operating power source means for providing operating current to the operating loop;

deacceleration warning lamp means connected in the operating loop for incandesing in response to operating current from the operating power source means when operating current flows through the operating loop;

isolation relay contacts at least one of which is movable from an open position distant from the isolation relay coil to a closed position proximate to the isolation relay coil in response to the magnetic field for moving the movable contact into electrical engagement with the other contact to complete the operating loop permitting operating current to flow through the warning lamps, the movable contact returning to the open distant position in resonse to the termination of the magnetic field.

4,418,332

NOISE INSENSITIVE COMPARATOR

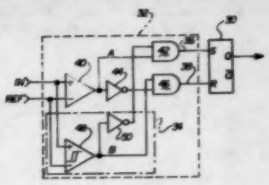
Joseph P. Mefford, Glen Cove, N.Y., assignor to Harris Corporation, Melbourne, Fla.

Filed Jun. 24, 1981, Ser. No. 276,967
Int. Cl.³ H03K 5/153, 5/24
U.S. Cl. 340—146.2 **25 Claims**

1. Apparatus for comparing the values of first and second signals comprising:

output means triggerable to provide an indication; and

output control means responsive to said first and second signals for triggering said output means to provide said indication when the values of said first and second signals cross over, but only if said first and second signal values have deviated



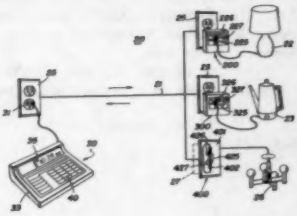
from one another by more than a selected amount since said output means was last triggered.

4,418,333

APPLIANCE CONTROL SYSTEM

Richard J. Schwarzbach; Manley S. Keeler, both of Naperville; Randy J. Cavaiani, Hanover Park, and Michael K. Chapman, Sycamore, all of Ill., assignors to Pittway Corporation, Aurora, Ill.

Filed Jun. 8, 1981, Ser. No. 271,244
Int. Cl.³ H04Q 9/00; G06F 15/20; H04B 3/54
U.S. Cl. 340—310 A **33 Claims**



1. In a system including a central unit for controlling a remote lamp, a slave unit coupled to the remote lamp, and means providing communication between the central unit and the slave unit, the slave unit including light intensity control means variable among a plurality of intensity levels corresponding respectively to an OFF condition and a maximum intensity condition and a plurality of intermediate intensity conditions of the associated lamp, the central unit including means for transmitting to the slave unit a control signal for operating the light intensity control means, the improvement comprising: means in the central unit for transmitting to the slave unit a preset intensity signal; and processor means in the slave unit operating under stored program control; said processor means including means for sensing the intensity level of the light intensity control means; said processor means including means responsive to said preset intensity signal when said light intensity control means is in either the OFF level or the maximum intensity level for setting said light intensity control means to a predetermined intermediate intensity level.

4,418,334

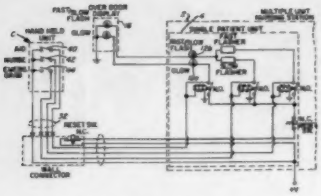
SIGNAL DISPLAY SYSTEM AND LUMINAIRE APPARATUS FOR OPERATING SAME

Dorothy K. Burnett, 87 Pine St., Belmont, Mass. 02178

Filed Jan. 26, 1981, Ser. No. 228,270
Int. Cl.³ G08B 7/06
U.S. Cl. 340—332 **7 Claims**

1. A call system for use in hospitals, nursing homes and the like, wherein services provided may be classified in three groups in terms of importance in responding to the patient's needs including services lowest in importance by a nurse's aide, services of greater importance rendered by a nurse or a

doctor and services of greatest importance rendered by an emergency unit or team, said call system comprising a luminaire apparatus including a call lamp to be located at a nurse's call station, electrical circuitry for connecting the call lamp with a patient's room at a distance from the call station and a



portable call box located in the patient's room at a patient's bedside, said call box having constructed therein a plurality of switches for selectively energizing the call lamp and producing light signals or differing light characteristics which are arranged or coded in ascending order of importance and which are correlated with the said three classified groups of services.

4,418,335

INFRARED INTRUSION DETECTOR WITH PYROELECTRIC SENSOR AND CHARGE AMPLIFIER

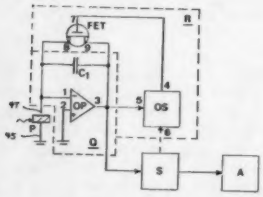
Rudolf Genähr, Männedorf, Switzerland, assignor to Cerberus AG, Männedorf, Switzerland

Filed Sep. 18, 1981, Ser. No. 303,630

Claims priority, application Switzerland, Oct. 6, 1980, 7441/80

Int. Cl.³ G08B *13/18*

U.S. Cl. 340—565 **12 Claims**



1. An infrared intrusion detector comprising:
a pyroelectric detector element;
an evaluation circuit serving for giving an alarm signal in the event of a change in radiation of the detector element caused by a moving object;
said evaluation circuit being operatively connected with said pyroelectric detector element;
said evaluation circuit containing a charge amplifier;
said detector element having an output;
said charge amplifier having an input; and the input of the charge amplifier being connected with the output of the detector element.

4,418,336

ALARM INDICATING DISLOCATION OF FIRE EXTINGUISHER

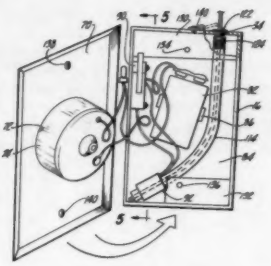
John D. Taylor, 3951 Lotus Dr., Waterford, Mich. 48095

Filed Jul. 17, 1981, Ser. No. 284,474

Int. Cl.³ G08B *13/14*

U.S. Cl. 340—571 **10 Claims**

1. An alarm for detection of dislocation of a portable fire extinguisher from a relatively stationary storage post comprising:
a substantially enclosed alarm housing having an audible alarm and means for energizing said alarm enclosed therein, and said housing further including a tubular passageway open at one end to the exterior of the housing;
switch means for activating said energizing means comprising an elongated, flexible member, a first free end of said elongated member being slidably receivable in said tubular passageway, and a means fixedly positioned with respect to said tubular passageway responsive to the position of said first end for activating and deactivating said energizing means so that with said flexible member in-



serted in said tubular passage to a position merely adjacent to, but not in electrical contact with said responsive means, said switch means deactivates said energizing means and so that with said flexible member spaced apart from said responsive means, said switch means activates said energizing means; and
said alarm housing being fixed relative to one of said fire extinguisher or said relatively stationary post, and a second end of said elongated member being fixed to a structural element displaceable with respect to said one of said fire extinguisher or said stationary post.

4,418,337

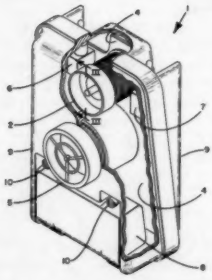
ALARM DEVICE

Ramzi N. Bader, West Covina, Calif., assignor to Spectrol Electronics Corporation, City of Industry, Calif.

Filed Aug. 3, 1981, Ser. No. 289,625

Int. Cl.³ G08B *13/14*

U.S. Cl. 340—571 **10 Claims**



1. A device for monitoring the movement of a person or article, comprising:
a first means for providing a magnetic field;
a second means for detecting changes in the magnetic field provided by the first means due to any changes in the position of the first means relative to the second means and for generating an electrical signal varying in magni-

tude in proportion of the amount of change in the magnetic field which is detected;

a third means for moving the first means relative to the second means in response to movements of the person or article in any direction;

an alarm means for producing an alarm signal when the alarm means is energized;

a circuit means having an adjustable sensitivity, connected between the second means and the alarm means, for processing the electrical signal generated by the second means and for energizing the alarm means when the processed electrical signal meets predetermined conditions;

a means for housing the first means, second means, third means, alarm means, and circuit means to form a selfcontained unit; and

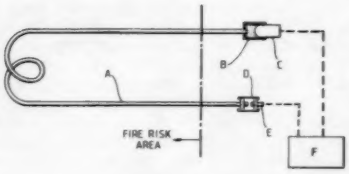
a means for attaching the unit to the person or article.

4,418,338

OPTICAL FIBRE U.V. AND/OR I.R. LINE FIRE DETECTOR

Dennis W. Burt, The Bungalow, Woodhouse La., Loosegate, Nr. Spalding, Lincolnshire, England

Filed Nov. 20, 1980, Ser. No. 208,558
Int. Cl.³ G08B *17/12*
U.S. Cl. 340—578 **12 Claims**



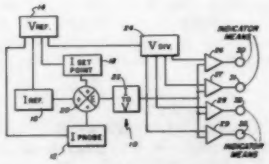
1. A fire detection system comprising an optical fibre having first and second ends and an exterior surface extending between the first and second ends and means connected to the optical fibre for detecting at least one of U.V. and I.R. radiation, said radiation being absorbed through any point of the entire exterior surface of the fibre.

4,418,339

TEMPERATURE SENSING CIRCUIT FOR SEMICONDUCTOR JUNCTION TEMPERATURE PROBE

Walter R. Spofford, Jr., Bedford, and Daniel I. Pomerantz, Lexington, both of Mass., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jun. 9, 1980, Ser. No. 157,477
Int. Cl.³ G08B *17/06*; G01K *7/02*
U.S. Cl. 340—595 **3 Claims**



1. A temperature sensing circuit for a semiconductor junction temperature probe, comprising:

means for biasing said probe for causing the current flowing through said probe to be proportional to the temperature of said probe;

means for providing a selectively variable reference current representing a selectively variable set point temperature, said reference current being linearly variable with respect to selectable set point temperatures, said means for providing including a constant reference current source and a variable reference current source;

a current summation junction means for coupling said probe and said means for providing said reference current and for summing said reference current and the current flowing through said probe; and

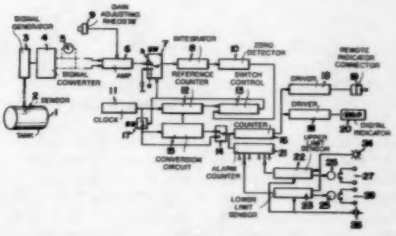
means coupled to said junction means for producing an output signal in response to the summation of said reference current and the current flowing through said probe to indicate the relationship between said set point temperature and the temperature of said probe, said means for producing an output signal including a current to voltage converter having an input coupled to said current summation junction, said current to voltage converter including an operational amplifier having first and second inputs and an output, a feedback path for said operational amplifier, and means for providing a constant reference voltage to said amplifier first input, said amplifier second input being coupled to said current summation junction, said feedback path being coupled between said amplifier output and said amplifier second input.

4,418,340

LIQUID LEVEL INDICATOR IN A CYLINDRICAL GASOLINE TANK OF THE HORIZONTAL TYPE

Sozaburo Maeshiba, 1-33 2 chome, Tani, Chuo-ku, Fukuoka, Japan

Filed Apr. 10, 1981, Ser. No. 252,789
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—618 **3 Claims**



1. An indicator for indicating the quantity of liquid in a tank comprising, a sensor for sensing the level of liquid in the tank and for generating an output signal indicative of the liquid level, a function generator connected to receive the output signal of the sensor and to supply a signal corresponding to a function comprising a straight line segment approximation of the relationship between the quantity of liquid and the liquid level in the tank, said function generator including an analog-to-digital converter which comprises an integrator, a two way switch for connecting the input of the integrator selectively to receive the signal from the sensor and a reference signal, a clock oscillator, a reference counter connected to the clock oscillator to control the switch to select the reference signal when a predetermined count is reached, and a zero detector connected to the output of the integrator to control the switch to select the sensor signal when the integrator output reaches zero, said function generator further comprising a nonlinear digital-to-digital conversion circuit connected to said clock for producing output pulses in response to clock pulses, corresponding to approximate polygonal lines of a curve of a segmental function corresponding to the relationship between the quantity of liquid and the liquid level in a cylindrical gasoline

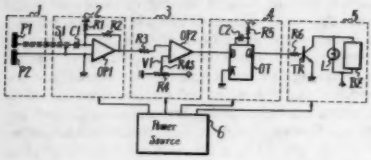
tank having a horizontal axis, a digital counter connected to the output of the nonlinear conversion circuit, and a digital indicator connected to the output of the digital counter to indicate the quantity of the liquid in the tank.

4,418,341

NOISE DETECTION APPARATUS

Hajime Yoshida, Chofu, Japan, assignor to Hajime Industries Ltd., Tokyo, Japan

Filed Dec. 19, 1980, Ser. No. 218,128
Claims priority, application Japan, Apr. 10, 1980, 55-47381
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—635 **9 Claims**



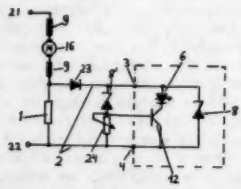
1. A noise detection apparatus comprising:
(a) a first means for detecting a high frequency pulse field as generated from a noise generation source without being connected to such noise generation source;
(b) a second means for passing therethrough high frequency pulse components of an output from said first means;
(c) a third means for producing a pulse signal with a predetermined width responsive to an output from said second means;
(d) a fourth means for indicating generation of noise on receiving the pulse signal from said third means; and
(e) a power source for supplying power to said second to fourth means.

4,418,342

METHOD OF AND A CIRCUIT FOR INDICATING THE OPTIMUM ADJUSTMENT OF THE WORKING POSITION OF A BRUSH ROLLER IN AN ELECTRICALLY OPERATED FLOOR CLEANING APPLIANCE

Hans-Joachim Aschoff, Wuppertal, and Lothar Cholewa, Herne, both of Fed. Rep. of Germany, assignors to Vorwerk & Co Interholding GmbH, Wuppertal, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 46,373, Jun. 7, 1979, abandoned. This application Sep. 29, 1981, Ser. No. 306,701
Claims priority, application Fed. Rep. of Germany, Jun. 15, 1978, 2826133
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—679 **7 Claims**



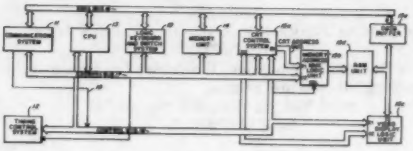
1. A circuit for indicating the optimum adjustment of the working position of a bristle roller driven by an electric motor in a floor cleaning appliance, comprising a resistance connected in series with the current circuit of the electric motor; a switching circuit responsive to a predetermined voltage drop across said resistance; indicating means controlled by said switching circuit for signalling a difference between said voltage drop and a preset voltage corresponding to the load of said motor at the optimum adjustment of said roller; and said switching circuit including at least two parallel connected circuit branches, one of said branches including a light-emitting diode and the other branch a series connection of a semiconductive switching element and a light-emitting diode.

4,418,343

CRT REFRESH MEMORY SYSTEM

Joseph L. Ryan, Tuscon, Ariz.; Elias Safdie; Richard R. Watkins, both of Chelmsford, Mass., and Frederick E. Kobs, East Pepperell, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Feb. 19, 1981, Ser. No. 235,820
Int. Cl.³ G09G *1/02*
U.S. Cl. 340—723 **2 Claims**



1. A video control system for a video terminal having video display logic, and further having a timing control system, a communication system, a central processing unit (CPU) and a main memory unit each in electrical communication with the other by way of an address bus, a data bus and a control bus operating at CPU clock rates, said video control system comprising:
(a) a CRT control system for receiving video control configuration parameters from said data bus under control of the CPU and, responsive to a time divided character clock control signal received from said timing control system and to said configuration parameters, for controlling the operation of said video display logic and generating binary address codes representative of video characters and visual attributes;
(b) multiplexer logic means responsive to said character clock control signal and in electrical communication with said address bus and said CRT control system for selecting binary address codes supplied by said CPU on the address bus during a first segment of the character clock control signal or binary address codes supplied by said CRT control system during a second segment of the character clock control signal; and
(c) memory logic means responsive to said character clock control signal, to mode selection control signals received from said CPU, and to binary address codes received from said multiplexer logic means for receiving under control of said CPU binary video character and visual attribute codes from said communication system by way of said data bus during said first segment of the character clock control signal, and for supplying said binary video character and visual attribute codes under the control of said CRT control system to said video display logic during said second segment of the character clock control signal.

4,418,344

VIDEO DISPLAY TERMINAL

Robert J. Brown, Hammonton, N.J., assignor to Datamedia Corporation, Pennsauken, N.J.

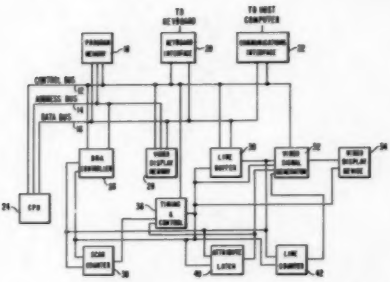
Filed Dec. 10, 1981, Ser. No. 329,551
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—726 **8 Claims**

1. Apparatus for generating a video display of a plurality of characters in a plurality of video frames, each frame including a plurality of character rows, each displayed character row being formed of a plurality of scan lines and having a plurality

of character spaces, with a vertical retrace interval occurring following generation of each video frame and prior to generation of the next video frame, the plurality of characters to be displayed being selected from a group of characters including a plurality of character rows at least equal in number to the plurality of character rows to be displayed in one of the video frames, and permitting substantially continuous scrolling of the displayed character rows with the scrolling off of a character row including the removal of one scan line thereof during each of a plurality of video frames until the character row is completely removed and the scrolling on of a character row including the addition of one scan line thereof during each of a plurality of video frames until the character row is completed, said apparatus comprising:

a video display memory having a plurality of memory segments each with a memory address, each memory segment including a plurality of contiguous character storage locations, equal in number to the number of character spaces in one of the character rows, for storing coded representations of characters to be displayed on a video display device, and at least one parameter storage location for storing a coded parameter signal indicative of desired parameters for the display of the associated character row;

a controller responsive to receipt of a memory address signal indicative of a memory segment within said video display memory for enabling the indicated memory segment;



video display generating means coupled to said video display memory for generating a video display of the characters represented by the coded representations stored in the enabled memory segment;

means responsive to a first property of the coded parameter signal stored in the enabled memory segment for causing said video display generating means to commence the generation of the video display at a preselected one of the scan lines of the characters represented by the coded representations stored in the enabled memory segment and responsive to a second property of the last-named coded parameter signal to end the generation of the video display after generation of a preselected number of scan lines thereof;

means for applying to said controller a memory address signal encoded within the coded parameter signal stored in the enabled memory segment, to cause said controller to next enable the memory segment indicated by the last-named memory address signal; and

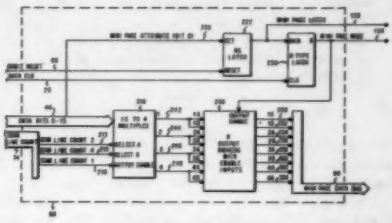
means for updating the coded parameter signals during vertical retrace intervals to format the first properties, the second properties and the stored memory address signals within selected ones of the coded parameter signals to change the preselected ones of the scan lines, the preselected numbers, and the indicated memory segments thereof to cause scrolling of the display.

4,418,345

DISPLAYING A FULL PAGE REPRESENTATION

Kent R. Demke, and Joanne L. Mumola, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 24, 1980, Ser. No. 219,666
Int. Cl.³ G09G *1/00*
U.S. Cl. 340—731 **8 Claims**



1. For use in a word processing system including a CRT of the interlaced scanning type, wherein odd and even numbered lines are alternately scanned, a main memory, and a refresh buffer, and in a method of displaying a representation of a full page of text on less than the entire CRT the method of developing a miniature character representation symbol including the steps of:

(1) storing in said refresh buffer an indicator of the presence or absence of a character of text stored in the main memory;

(2) monitoring the line count number during scanning on output for developing a signal representative thereof;

(3) displaying blanks on the CRT when said signal indicates the line count is even; and

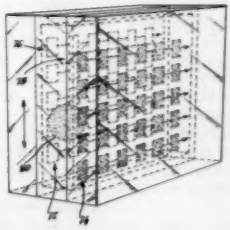
(4) displaying the indicators stored in the refresh memory when said signal indicates the line count is odd.

4,418,346

METHOD AND APPARATUS FOR PROVIDING A DIELECTROPHORETIC DISPLAY OF VISUAL INFORMATION

J. Samuel Batchelder, 85 Allison Rd., Katonah, N.Y. 10536

Filed May 20, 1981, Ser. No. 265,637
Int. Cl.³ G09G *3/34*
U.S. Cl. 340—787 **21 Claims**



1. A dielectrophoretic display comprising:

a housing formed, at least in part, from a light transmissive material;

a first electrically neutral material within said housing having a first dielectric constant;

a second electrically neutral material within said housing having a second dielectric constant different from that of said first material, said second material being visually distinguishable from said first material; and

means for selectively applying a non-uniform electrical field

within said housing to cause relative movement of said first and second materials, including translational movement, as a result of dielectrophoretic forces resulting from said electrical field;

said means for applying said non-uniform field including at least one electrode and means for selectively varying the charge on said at least one electrode for applying a non-uniform field to said first and second materials;

said first and second materials being electrically neutral both before and during the application of said non-uniform electrical field thereto;

whereby the relative positions of said first and second materials may be established by said electrical field to present visually identifiable information.

4,418,347

ROTATIONAL POSITION DETECTING APPARATUS

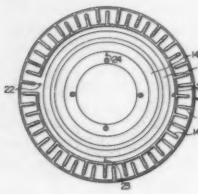
Hiroaki Tanaka, and Shigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

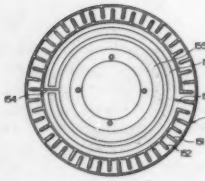
Continuation-in-part of Ser. No. 105,118, Dec. 19, 1979, abandoned. This application Nov. 6, 1981, Ser. No. 318,854

Claims priority, application Japan, Dec. 27, 1978, 53-162707; Nov. 10, 1980, 55-157808

Int. Cl.³ G08C *19/10*

U.S. Cl. 340—870.37 **7 Claims**





1. A rotational position detecting apparatus comprising:

a first plate supported in a relation to a rotating member and provided with a first and a second toothed electrode electrically insulated from each other and a first and a second circular electrode electrically insulated from each other, said first and second toothed electrodes having a plurality of equispaced radial teeth respectively and alternately, and, said first toothed electrode and first circular electrode being electrically connected with each other and said second toothed electrode and second circular electrode being electrically connected with each other;

a second plate rotated by said rotating member and provided with a third and a fourth toothed electrode insulated electrically from each other and a third and a fourth circular electrode insulated electrically from each other, said third and fourth toothed electrodes having a plurality of equispaced radial teeth respectively and arranged alternately in a manner so that said first and second toothed electrodes and said first and second circular electrodes of said first plate can be opposite to said third and fourth toothed electrodes and said third and fourth circular electrodes of said second plate, correspondingly and respectively, said third toothed electrode and third circular electrode being electrically connected with each other, and said fourth toothed electrode and fourth circular electrode being electrically connected with each other;

a rotation detecting circuit for detecting rotation of the second plate in accordance with a static capacitance change occuring between the electrodes of the first plate and second plate as one of the plates rotates by supplying said first and second toothed electrodes of said first plate with a first and a second periodic signal respectively which are opposite in phase and same in frequency with each other; and

a compensating capacitor for cancelling the distributed capacity existing between the electrodes of said first plate.

4,418,348

ROTATION POSITION DETECTOR USING STATIONARY AND ROTATABLE DISK PLATES

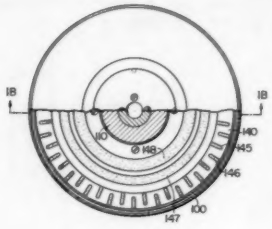
Hiroaki Tanaka, and Sigeyuki Akita, both of Okazaki, Japan, assignors to Nippon Soken, Inc., Nishio, Japan

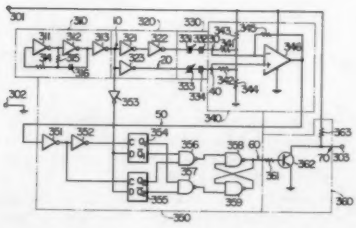
Continuation of Ser. No. 105,118, Dec. 19, 1979, abandoned. This application Jan. 26, 1982, Ser. No. 343,015

Claims priority, application Japan, Dec. 27, 1978, 53-162707

Int. Cl.³ G08C *19/10*

U.S. Cl. 340—870.37 **2 Claims**





1. An apparatus for detecting the rotation of a rotating member comprising:

a stationary disk plate supported in a stationary relation to said rotating member and provided with a first and second toothed electrodes electrically insulated from each other and a first and second circular electrodes electrically insulated from each other, said first and second toothed electrodes having a plurality of equispaced radial teeth respectively and arranged alternately and continuously, and said first and second circular electrodes being insulated electrically from said first and second toothed electrodes;

a rotatable disk plate rotated by said rotating member and provided with a third and fourth toothed electrodes insulated electrically from each other and a third and fourth circular electrodes insulated electrically from each other, said third and fourth toothed electrodes having a plurality of equispaced radial teeth respectively and arranged alternately, said third and fourth circular electrodes being

electrically connected to said third and fourth toothed electrodes respectively, and said third and fourth toothed electrodes and said third and fourth circular electrodes being arranged to face said first and second toothed electrodes and said first and second circular electrodes of said stationary disk plate with a spacing respectively;

input circuit means including an oscillator for supplying said first and second toothed electrodes of said stationary disk plate with a first and second periodic rectangular signals respectively which are opposite in phase and same in frequency with each other; and

output circuit means including a comparator for receiving output rectangular signals produced from said first and second circular electrodes of said stationary disk plate and a phase detector circuit responsive to the comparator output and the oscillator output to derive a rotation signal at every predetermined angular rotation of said rotating member.

4,418,349

AIRPORT SURVEILLANCE SYSTEM

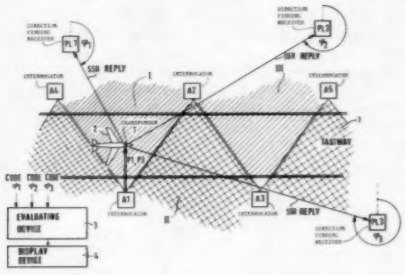
Günter Höfgen, Kornwestheim, and Heinz L. Cohrs, Remseck, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Mar. 30, 1981, Ser. No. 248,877

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1980, 3012616

Int. Cl.³ G01S *13/80, 13/91*

U.S. Cl. 343—6.5 R **10 Claims**



1. A radar system for airport surface surveillance for identifying the positions on said surface of vehicles including aircraft equipped with SSR transponders responsive to a predetermined P1 and P3 interrogation pulse format providing predetermined P1 to P2 time spacing, and to a P2 pulsed pattern comprising:

first means including a plurality of self-timed, mutually asychronous pulsing interrogators providing generally lobe-shaped horizontal radiation patterns, said interrogators distributed along the sides of a pathway in a substantially symmetrical alternating pattern whereby each interrogator is located on a side of said pathway opposite that of the preceding and the next succeeding interrogator along the length of said pathway;

second means within each of said interrogators for radiating signals corresponding to said P1 and P3 pulses in a generally lobe-shaped pattern within a corresponding sector across said pathway, and signals corresponding to said P2 pulses in a pattern having lower amplitude within said sector than the amplitude of said lobe-shaped pattern but higher amplitude than said lobe-shaped pattern outside said sector;

third means comprising at least two auxiliary equipments spaced from said pathway for receiving the SSR transponder reply signals emitted by said SSR transponders, said auxiliary equipments each being adapted to determine at least one of the discrete parameters consisting of angle of arrival of said SSR reply signals and time of arrival of said SSR reply signals; and

fourth means responsive to at least one of said discrete parameters determined by said third means for identifying the instantaneous position of said SSR transponder along said airport surface.

4,418,350

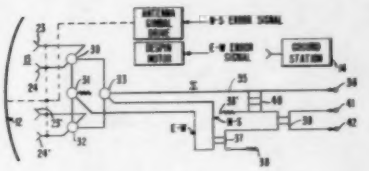
TWO-AXIS ANTENNA DIRECTION CONTROL SYSTEM

Harold A. Rosen, Santa Monica, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Mar. 23, 1981, Ser. No. 246,793

Int. Cl.³ H04B *7/00*

U.S. Cl. 343—359 **6 Claims**



1. In a communication system, an arrangement for producing an antenna pointing error signal, comprising:

a two-dimensional antenna assembly having feed horns and a reflector for receiving a radiated frequency modulated signal from a remote signal source;

means connected to said antenna feed horns for producing a sum signal and two orthogonally related difference signals;

means for combining said difference signals in phase quadrature relationship; and

circuit means including a directional filter having a flat amplitude response and linear phase shift over the frequency range of frequency modulation for combining said sum signal with said combined difference signals thereby to produce an antenna pointing error signal.

4,418,351

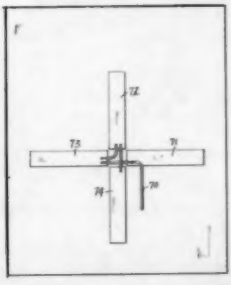
ANTENNA SYSTEM WITH DIRECTIONAL SWITCHING MEANS

John D. Fackler, 172 Center St., Southport, Conn. 06490

Filed Apr. 13, 1981, Ser. No. 253,658

Int. Cl.³ H01Q *21/26*

U.S. Cl. 343—797 **26 Claims**



1. An antenna system comprising a plurality of angular displaced antenna, each adapted to be coupled to a portable transmitter, said antenna system being in fixed relation to the transmitter, direction sensing means, means responsive to said direction sensing means for directionally orienting said antenna

system toward a predetermined location, antenna selection means, and means responsive to said direction sensing means and said means for orienting, for actuating said selection means to couple the antenna closest directionally oriented toward the predetermined location to the transmitter.

4,418,352

INK JET PRINTING APPARATUS

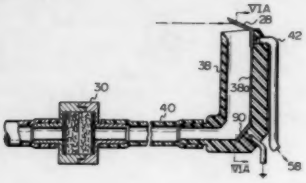
Masanori Horike, and Yutaka Ebi, both of Tokyo, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed May 10, 1982, Ser. No. 376,883

Claims priority, application Japan, May 18, 1981, 56-74478; May 18, 1981, 56-74479; May 18, 1981, 56-74480

Int. Cl.³ G01D *18/00*

U.S. Cl. 346—75 **14 Claims**



1. An ink jet printing apparatus comprising:

an ink ejection head for ejecting a jet of ink;

charging means for electrostatically and selectively charging ink droplets separated from the jet of ink;

deflection means for electrostatically deflecting the charged ink droplets;

charging pulse generator means for generating charging voltage pulses for a phase search and applying the voltage pulses to the charging means intermittently at a predetermined period;

gutter means comprising an upper conductive member for catching the charged ink droplets for the phase search, a lower conductive member which is connected to ground and passageway means formed of an electrically insulative material operatively connected between the upper and lower conductive members, the passageway means in combination with ink flowing downwardly therethrough constituting resistance means through which the upper conductive member is grounded; and

charge detection means for detecting a voltage appearing across the resistance means at said predetermined period when the charged ink droplets impinge on the conductive member of the gutter means to be discharged through the resistance means.

4,418,353

INK CONTROL FOR INK JET PRINTER

Jacob E. Thomas, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 7, 1982, Ser. No. 385,966

Int. Cl.³ G01D *15/18*

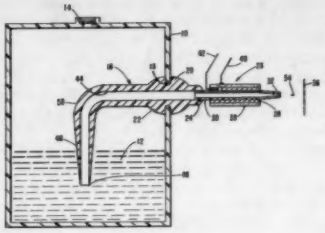
U.S. Cl. 346—140 R **14 Claims**

1. Means for absorbing pressure waves in an ink jet printing system comprising a

reservoir containing a supply of ink therein,

means operably associated with said supply of ink for ejecting ink in droplet form, and

conduit means carrying ink from said supply thereof to said ink ejecting means, said conduit means formed to have a substantially constant inside diameter passageway therethrough and having a portion decreasing in outside diameter for a distance in a direction away from said ink ejecting means and terminating in an ink inlet end immersed in said supply of ink whereby said decreased diameter portion is



responsive to absorb pressure waves by reason of the decreasing wall thickness of said portion.

4,418,354

METHOD OF MANUFACTURING JET NOZZLE DUCTS, AND INK JET PRINTER COMPRISING A JET NOZZLE DUCT MANUFACTURED BY MEANS OF THE METHOD

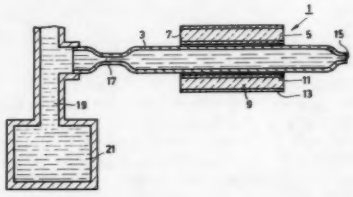
David J. Perduijn, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 5, 1982, Ser. No. 375,149

Claims priority, application Netherlands, May 7, 1981, 8102227

Int. Cl.³ G01D *15/16*; B05B *3/14*

U.S. Cl. 346—140 R **5 Claims**



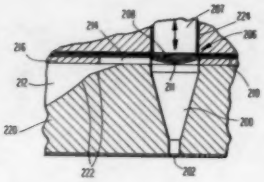
1. A method of manufacturing jet nozzle ducts (1), notably for ink jet printers, in which an approximately radially polarized tubular piezo-electric pumping member (7) is arranged around a portion of each jet nozzle duct to be formed in order to obtain a pumping section, characterized in that for the formation of the pumping members (7) use is made of two plates (23, 25) of a piezo-electric material, in a first major surface (27) of at least the first plate (23) there being formed mutually parallel channels (35) which extend from one edge of the first principal surface to the opposite edge, on both major surfaces (27, 29) of the first plate and on both major surfaces (31, 33) of the second plate (25) there being provided metal layers, (37, 39, 41, 43), both plates being polarized by the application of an electric voltage between the metal layers, the first major surface of the first plate and the first major surface of the second plate being covered with a layer of adhesive (5), the second plate being arranged on the first plate so that the two major surfaces provided with adhesive face one another, the adhesive being subjected to a curing process.

4,418,355

INK JET APPARATUS WITH PRELOADED DIAPHRAGM AND METHOD OF MAKING SAME

Thomas W. DeYoung, Stormville, and Hector Miranda, Yorktown Heights, both of N.Y., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jan. 4, 1982, Ser. No. 336,601
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **22 Claims**



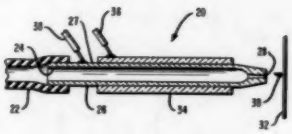
1. An ink jet apparatus comprising:
an ink jet chamber including an ink droplet ejection orifice;
transducer means; and
a deformable wall portion coupled to said transducer means and located between said transducer means and said chamber and forming a portion of said chamber, said wall portion mechanically preloaded to a deformed position extending into said chamber when said transducer means is in a de-energized state and returning to a position of lesser extension nto the chamber when the transducer is in an energized state.

4,418,356

INK JET PRINT HEAD

John W. Reece, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Sep. 23, 1981, Ser. No. 305,052
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R **7 Claims**



1. An ink jet print head comprising a
housing,
means supplying ink into said housing, a
chamber within the housing for receiving ink, and a
plurality of electrically pulsed ink droplet drive elements positioned to receive ink from the chamber and disposed in substantially parallel manner and arranged in inclined rows within the housing, the drive elements having nozzles mutually parallel and operable to cause ink to be ejected in parallel manner from the housing in droplet form.

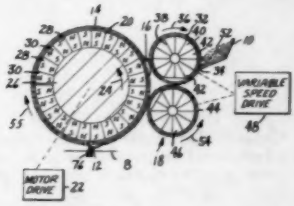
4,418,357

TONER TRANSPORT SYSTEM FOR ELECTROGRAPHIC IMAGING

Charles P. Huss, Oak Park Heights, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed May 28, 1981, Ser. No. 267,790
Int. Cl.³ G01D *15/06*
U.S. Cl. 346—153.1 **4 Claims**

1. A toner powder transport system for providing controlled movement of magnetically attractable toner powder over an imaging styli array including:
a nonrotatable cylindrical member of nonmagnetic material having a protuberance at its surface;
a rotatable magnetic means disposed for rotation about its axis in one direction within said nonrotatable cylindrical member, said rotatable magnetic means presenting alternate magnetic poles adjacent the inner surface of said nonrotatable cylindrical member;
an imaging styli array positioned at the surface of said nonrotatable cylindrical member;
a toner reservoir for holding a supply of magnetically attractable toner powder, said toner reservoir having an opening through which toner can be removed from said toner reservoir;
a magnetic transport means disposed between said toner reservoir and said nonrotatable cylindrical member, said magnetic transport means having a first portion presented near said protuberance and a second portion presented near said nonrotatable cylindrical member, at an area removed from said protuberance, said magnetic transport means presenting a magnetic field at said protuberance



that is of a strength sufficient to move toner presented at said protuberance to said magnetic transport means, said rotatable magnetic means presenting a magnetic field at said second portion that is of a strength sufficient to move toner powder from said magnetic transport means to said nonrotatable cylindrical member, said magnetic transport means including a surface disposed for movement adjacent said opening in said toner reservoir whereby toner powder, when present in said toner reservoir, is magnetically transferred from said toner reservoir and carried to said second portion for magnetic transfer to said nonrotatable cylindrical member where rotation of said rotatable magnetic means causes said toner powder that is transferred to said nonrotatable cylindrical member to be magnetically transported over the surface of said nonrotatable cylindrical member to said imaging styli array and thence to said protuberance, where toner powder reaching said protuberance is magnetically transferred to said magnetic transport means from said nonrotatable cylindrical member at said first portion of said magnetic transfer means and returned by said magnetic transport means to said toner reservoir.

4,418,358

METHOD AND SYSTEM TO CORRECT COLOR ERRORS IN COLOR TELEVISION SIGNALS GENERATED BY SCANNING A FILM

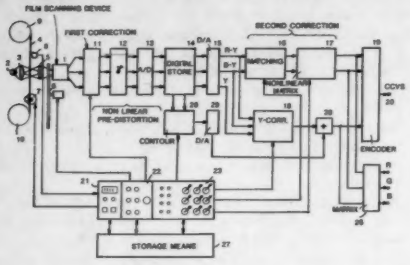
Dieter Poetsch, Ober-Ramstadt, Fed. Rep. of Germany, and Armand Belmares-Sarabia, 4250 Veterans Hwy., Holbrook, N.Y. 11741, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany and Armand Belmares-Sarabia, Holbrook, N.Y.

Filed Nov. 7, 1980, Ser. No. 204,883
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—80 **20 Claims**

1. A Color Correction System for a television film scanner which includes an opto-electronic scanning device (1) provid-

ing scanned color component signals and a digital store (14) comprising

first signal correction means (11) connected to receive the



scanned signals from said scanning device, and being connected between said scanning device (1) and said digital store (14); and second signal correction means (16, 17, 18) being connected to the output of the digital store (14).

4,418,359

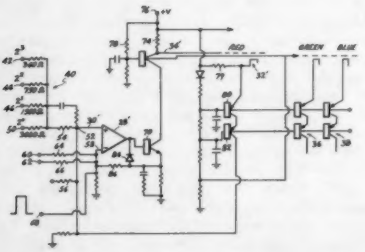
OMNISPECTRAVISION

John J. Stapleton, East Brunswick, N.J., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Division of Ser. No. 157,136, Jun. 6, 1980. This application Mar. 18, 1982, Ser. No. 359,451

Int. Cl.³ H04N *9/20*

U.S. Cl. 358—65 **12 Claims**



1. A device for displaying in visible color multi-sensor or multi-spectral data which is in the form of video signals corresponding to said data, said device comprising:

a plurality of color guns each of which is capable of providing a separate continuously controlled beam current, with at least one gun for each primary color to be displayed;

a plurality of operational amplifiers each having an input, capable of receiving a video signal corresponding to a primary color with at least one differential cascade amplifier comprising each color gun, and a direct, emitter coupled semiconductor output; and

a feedback loop connected between the output and the input of each operational amplifier respectively, incorporating in said loop a single color gun which is driven as a differential cascade feedback element of said amplifier a result of which is the production of a controlled beam current by the gun which varies linearly despite disturbances as the video signal to the amplifier varies during image production.

4,418,360

IMAGE PROCESSING

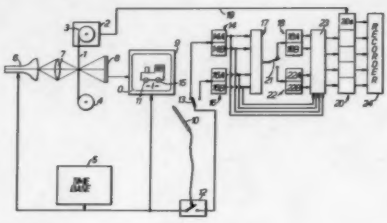
John A. Glasgow, Great Baddow, England, assignor to The Marconi Company Limited, Chelmsford, England

Filed Nov. 30, 1981, Ser. No. 325,742

Claims priority, application United Kingdom, Dec. 3, 1980, 8038765

Int. Cl.³ H04N *3/36*

U.S. Cl. 358—108 **14 Claims**



1. A method of processing successive frames of information from surveillance apparatus to produce respective representations of a subject viewed by the surveillance apparatus, the method comprising detecting at least two characteristic features in each frame and adjusting the manner of processing for different frames so as to tend to fix the co-ordinates of both features in each of the representations whereby effects of unwanted movement of the surveillance apparatus relative to the subject are reduced.

4,418,361

TRACKING LINK

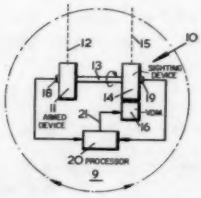
Ralph H. Bagnall-Wild, Helensburgh; Gordon R. Smith, Torrance; John H. Stewart, and David S. Ritchie, both of Glasgow, all of Scotland, assignors to Barr & Stroud Limited, Glasgow, Scotland

Filed Apr. 30, 1982, Ser. No. 373,734

Claims priority, application United Kingdom, May 15, 1981, 8114998

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—125 **5 Claims**



1. A system comprising a trunnion-mounted aimed device having a pointing direction,

a trunnion-mounted sighting device having a line of sight, a visual display providing an image of the field of view containing said line of sight,

drive means connected to said aimed device for altering the elevation of said pointing direction,

a tracking link interconnecting the aimed device and the sighting device to provide approximate correspondence in elevation of said pointing direction of said line of sight,

a first elevation sensor associated with the aimed device for providing a first sensor measurement accurately measuring the elevation of the aimed device with respect to a datum,

a second elevation sensor associated with the sighting device for providing a second sensor measurement accurately

measuring the elevation of the sighting device with respect to said datum,

wherein said visual display comprises electronic means for generating a deflectable indicator mark designating the pointing direction and an electronic processor is provided operable according to the sensor measurements to deflect the electronically generated indicator mark on said visual display accurately to designate the pointing direction of the aimed device so as to compensate in the elevation axis for backlash and inertia of said tracking link and in the traverse axis for lack of parallelism of the trunnions.

4,418,362

METHOD AND DEVICE FOR IMAGE ANALYSIS

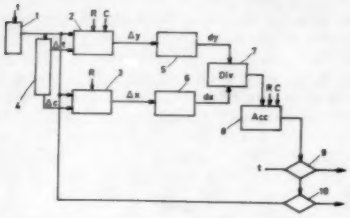
Morton Nadler, 17 Les Huppes, 78170 La Celle Saint Cloud, France

Filed Dec. 28, 1981, Ser. No. 335,087

Claims priority, application United Kingdom, Jan. 2, 1981, 8100033

Int. Cl.³ H04N *1/10*

U.S. Cl. 358—293 **8 Claims**



1. A method for image analysis comprising producing a video signal indicative of the light intensity received at successive regular time intervals from an image scanned along a first direction at an automatically controlled known motion velocity and along a second direction at an unknown motion velocity, characterized in that it further comprises determining a reference contrast value from the difference between light intensities received from points of the image scanned along said first direction, determining a variable contrast value from the difference between light intensities received from points of the image scanned along said second direction, comparing said variable contrast value with said reference contrast value, and using said comparison for compensating for said unknown motion a velocity in the production of the videosignal.

4,418,363

VIDEO DISC PLAYER WITH RFI REDUCTION CIRCUIT INCLUDING SYNC TIP CLAMP

Kevin C. Kelleher, Plainfield, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Jun. 24, 1981, Ser. No. 276,898

Int. Cl.³ H04N *5/94*

U.S. Cl. 358—336 **6 Claims**

1. A video disc player of the type having:

pickup apparatus for recovering an information signal including synchronization signals recorded on a disc in the form of a modulated carrier; demodulation apparatus for demodulating the recovered signal; defect detection apparatus for detecting defects in the recovered signal; and defect compensating apparatus for providing a substitute signal in the playback display of said recovered signals during occurrences of defects in the recovered signal; said player being subject to interference with normal playback display operations due to the pickup of unrecorded, externally applied signals; apparatus for reducing the influence of said external signals comprising:

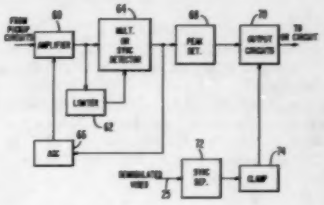
amplifier means connected to said pickup apparatus;

signal limiter means responsive to the signals provided by said amplifier means to provide an amplitude limited output signal;

product generator means responsive to the signals from said amplifier means and to said limited output signal for providing a signal corresponding to the product of the signals applied thereto;

signal detector means responsive to the product signal generated for detecting the amplitude of the product signal;

signal output means responsive to said detected output signal;



signal clamping means responsive to said recovered synchronization signals and connected to said signal output means to condition said signal output means to provide an output signal only when said detected signal exceeds an amplitude level related to the amplitude of the recovered signal during the occurrence of said synchronization signal; and

means for providing the output signal from said output means to said player defect compensation apparatus.

4,418,364

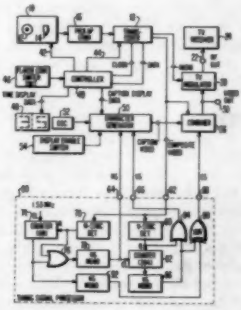
VIDEO PLAYER APPARATUS HAVING CAPTION GENERATOR

Charles M. Wine, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Sep. 28, 1981, Ser. No. 306,474

Int. Cl.³ H04N *5/91*

U.S. Cl. 358—336 **9 Claims**



1. A video player, comprising:

signal recovery means for producing a composite video output signal normally inclusive of vertical and horizontal timing pulses but being subject to partial or total interruption;

first detector means for detecting the presence of said horizontal timing pulses;

second detector means for detecting the absence of said horizontal pulses;

third detector means for detecting the presence of said vertical timing pulses;

fourth detector means for detecting the absence of said vertical timing pulses;

character generator means for producing a caption video output signal;

means for applying a synchronizing signal to said generator means in response to activation of any one of said detector means; and

means for combining said composite video signal, said caption video signal and output signals produced by the second and fourth detectors to provide a resultant video output signal in which missing ones of said timing pulses are replaced by respective substitute pulses.

4,418,365

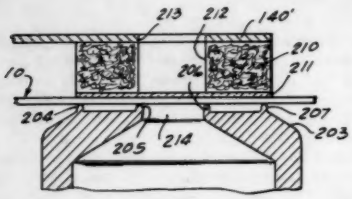
VIDEO DISC TRANSDUCER SYSTEM

Marvin Camras, Glencoe, Ill., assignor to IIT Research Institute, Chicago, Ill.

Continuation of Ser. No. 47,582, Jun. 11, 1979, abandoned, and a continuation-in-part of Ser. No. 519,340, Oct. 30, 1974, abandoned, and Ser. No. 826,054, Aug. 26, 1977, abandoned. This application May 26, 1981, Ser. No. 267,084

Int. Cl.³ H04N *5/85*

U.S. Cl. 358—342 **7 Claims**



1. A transducer system for transducing video signals, comprising:

(a) a disc record support with a central axis for mounting a disc record thereon for rotation about said central axis during a video signal transducing operation, said disc record support having an annular region surrounding said support and receiving an annular portion of a disc record which extends beyond said disc record support,

(b) a transducer device having an optical path disposed in alignment with said annular region, and a scanner operating at a video rate and coupled with said optical path for scanning successive optical images on an annular portion of a disc record which extends beyond said disc record support,

(c) said transducer device having record guiding means disposed at said annular region and guiding a radially outer portion of a disc record as it is rotated about said central axis at a frame transducing speed less than that required for a substantial air bearing effect and at said frame transducing speed maintaining substantially a predetermined positional relationship of such radially outer portion of said disc record relative to the optical path of said transducer device, and

(d) means comprising a drive for rotating said disc record at a rate such that the scanner scans a series of optical images along an annular portion of a disc record during each revolution of the disc record at said frame transducing speed with said record guiding means maintaining said predetermined positional relationship between the disc record and the transducer device throughout each revolution of said disc record to insure a stable scanning of the disc record by means of said transducer device,

(e) said record guiding means comprising a gate region providing a plurality of generally parallel elongated ribs spaced apart so as to engage the disc record along narrow segments thereof at opposite margins of the optical images on the annular portion of the disc record with the ribs extending generally in a circumferential direction relative to the disc record and being located at one side of the disc record, and active positioning means acting on the disc record in said annular region during a scanning operation and producing a biasing force biasing the disc record into continuous contacting engagement with said elongated ribs to precisely locate said annular portion of the disc record without any physical contact with the optical images, and means comprising said transducer device for scanning successive optical images on the annular portion of the disc record which is between the elongated ribs without any physical contact with such optical images, and

(f) a disc record having a central portion supported by said disc record support, and having an annular portion extending beyond said disc record support, said annular portion of said disc record having a contact-sensitive image storage means at one side thereof providing an arcuate image track with a circumferentially extending arcuate central image track portion for storing a series of optical images therealong, said arcuate image track having narrow arcuate segments at opposite margins of said circumferentially extending arcuate central image track portion,

(g) said record guiding means and said active positioning means being the sole means which engage with the annular portion of said disc record, and being constructed to engage the contact sensitive image storage means exclusively at said narrow arcuate segments of said arcuate image track and to be entirely clear of contact with said contact sensitive image storage means at said circumferentially extending central image track portion which stores said series of optical images.

4,418,366

HEAD CONTROL AND SIGNAL SELECTOR FOR PLAYBACK AT HIGH-SPEED OF HELICAL SCAN VIDEO TAPE

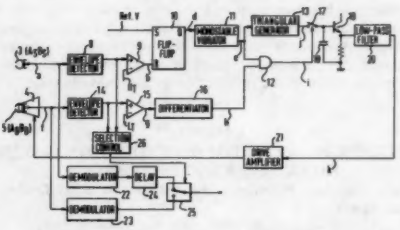
Ryusuke Moriya, Hadano, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Nov. 3, 1981, Ser. No. 317,905

Claims priority, application Japan, Nov. 12, 1980, 55-159112

Int. Cl.³ G11B *5/008*

U.S. Cl. 360—75 **6 Claims**



1. A video signal reproducing apparatus comprising:

a fixed head mounted on a rotary head drum and a movable head supported on said rotary head drum so as to have a predetermined phase difference relative to said fixed head and supported by a position control means so that the position of said movable head can be controlled in the traverse direction of a skew track formed on a magnetic tape;

phase matching means for matching the phase of a reproduced signal from said fixed head and a reproduced signal from said movable head;

means for adjusting the scanning path of said movable head relative to the scanning path of said fixed head by controlling said position control means such that a reduction in one reproduced signal level causes an increase in the other

reproduced signal level in said phase-matched state during high-speed reproduction; and

means for complementing one reproduced signal with the other reproduced signal for lower level portions.

4,418,367

MAGNETIC TAPE SETTING DEVICE FOR USE IN MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS

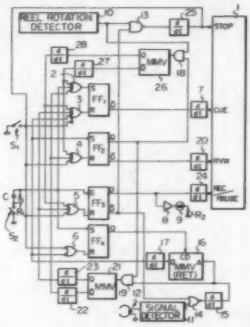
Kiichirou Nagai, and Takashi Okamoto, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Sep. 4, 1981, Ser. No. 299,333

Claims priority, application Japan, Sep. 6, 1980, 55-126987[U]

Int. Cl.³ G11B *15/18, 15/48, 21/08*

U.S. Cl. 360—75 **2 Claims**



1. A tape deck controller for controlling a magnetic tape apparatus to perform one of several operational modes including a CUE mode and an RVW mode in response to respective CUE and RVW commands, said magnetic tape apparatus including a magnetic head for detecting recorded signals on a magnetic tape, said CUE operational mode being a fast winding operation during which said head is engaged with said tape and said RVW operational mode being a winding operation in a direction opposite of said fast winding operation during which said magnetic head engages said tape, said controller including a pulse generator for producing a pulse signal when said magnetic head detects a recorded signal on said magnetic tape, a retriggerable timer unit for producing a first trigger signal upon the lapse of a first predetermined time period after disappearance of said pulse signal, a trigger unit for producing a second trigger signal in response to reoccurrence of said pulse signal during the RVW operational mode, a tape set completion signal generator for producing a tape set completion signal when triggered and a tape end detector for producing a tape end signal when the winding of said magnetic tape stops, said controller including:

a first R-S flip-flop circuit having a Q and Q output and being responsive to take a RESET state in response to said first trigger signal;

a first differentiator connected to the Q output of said first R-S flip-flop circuit for producing said CUE command upon change of state thereof from RESET to a SET state;

a second R-S flip-flop circuit adapted to take a SET state in response to said first trigger signal;

a second differentiator connected to the Q terminal of said second R-S flip-flop circuit for producing said RVW command upon change of state thereof from a RESET to said SET state;

start means for causing said first R-S flip-flop circuit to take the SET state when actuated;

a first timer unit for causing said first and second R-S flip-flop circuits to take respectively the SET state and the RESET state upon appearance of said second trigger signal, for causing said first R-S flip-flop circuit to take the RESET state, and for triggering said tape set completion signal generator upon the lapse of a third predetermined time period after the appearance of said second trigger signal; and

a second timer unit for causing said first and second R-S flip-flop circuit to take respectively the SET and RESET states upon appearance of said tape end signal when the second R-S flip-flop circuit takes the SET state, for causing said first R-S flip-flop circuit to take the RESET state, and for triggering said tape set completion signal generator upon the lapse of a fourth predetermined time period after the appearance of said tape end signal.

4,418,368

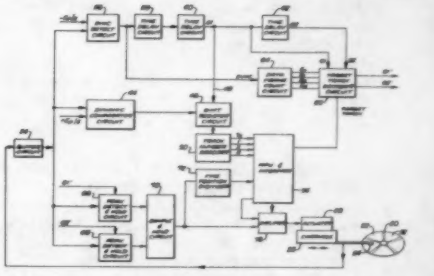
METHOD AND APPARATUS FOR POSITIONING A TRANSDUCER USING EMBEDDED SERVO TRACK ENCODING

Robert E. Nalley, San Jose, and Leonard R. Shenfield, Saratoga, both of Calif., assignors to Disctron, Inc., Milpitas, Calif.

Filed Mar. 31, 1981, Ser. No. 253,086

Int. Cl.³ G11B *21/08*

U.S. Cl. 360—78 **15 Claims**



1. A servo system for accurately positioning a transducer means radially in alignment with a selected data track on a magnetic disc having one or more groups of successively positioned partially circumferential servo tracks and data tracks having radial locations interspersed with said servo tracks, said selected data track being located in a said group and said disc moving relatively to said transducer means comprising:

a plurality of adjacent data frames of recorded servo signals located on each servo track, each said data frame on a servo track located adjacent to and aligned with a corresponding data frame on adjacent servo tracks, and encoded by having recorded thereon magnetic servo signals of the same sense at either a first or a second location within said data frame, said corresponding first and second locations of said adjacent data frames on adjacent tracks being aligned and located along the same radii, said data frames being encoded with said recorded servo signals so that said tracks within a said group are uniquely encoded and identifiable thereby, said transducer means producing detected servo signals of the same sense responsive to said recorded servo signals, said detected signals being indicative of the radial position of said transducer means relative to said servo and data tracks;

at least one set of recorded magnetic synchronization signals, said magnetic synchronization signals of the opposite sense of said magnetic servo signals on said disc, one synchronization signal of each set being located on each servo track with said synchronization signals of each set being radially aligned with one anothr on said tracks, said transducer means producing detected synchronization signals responsive to said recorded synchronization signals of the opposite sense to said detected servo signal;

positioning means for moving said transducer means radially with respect to said disc; and

a first means for detecting the radial location of said transducer means from said detected servo signals and for providing signals to said positioning means responsive to said 40 detected servo signals, said first means for detecting comprising:

means coupled to said transducer means for producing digitized clock pulses at times corresponding to the times of said detected servo signals detected by said transducer means;

a means for producing a fixed series of pulses from said detected synchronization signals, said fixed series of pulses containing a pulse corresponding to each adjacent data frame on a servo track, said pulse occurring at a time corresponding to either the first or second location for recorded servo signals within each data frame;

a shift register having its clock input coupled to said means for producing digitized clock pulses and its data input coupled to said means for producing a fixed series of pulses, whereby said shift register registers a binary number characteristic of the radial position of said transducer means relative to said servo and data tracks in a group; and

means for identifying the servo or data track with which said transducer means is radially aligned from said binary number characteristic of the radial position of said transducer means and for providing a signal to said positioning means in order to move said transducer means radially toward alignment with said selected data track.

4,418,369

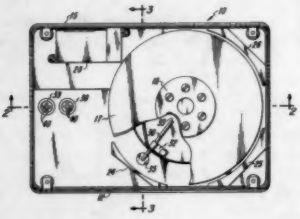
METHOD AND STRUCTURE FOR MAINTAINING A LOW CONTAMINATED ENCLOSURE

Roy A. Applequist, Windsor, Calif.; Richard M. Altobellis, Jamestown, and Robert F. Hoppe, Longmont, both of Colo., assignors to MiniScribe Corporation, Longmont, Colo.

Filed May 4, 1981, Ser. No. 260,494

Int. Cl.³ G11B *23/02, 25/04*

U.S. Cl. 360—98 **11 Claims**



1. In a memory storage device including a base and an enclosure substantially sealed to said base to define a volume, at least one disk mounted for rotation about a spindle passing through said base to the enclosed volume, and a spindle seal between said spindle and said base, the improvement comprising:

a ventilation opening defined from the enclosed volume through the enclosure to the surrounding ambient atmosphere with one end of the ventilation opening within the enclosed volume being position adjacent said spindle seal and the other end of the ventilation opening communicating with the surrounding ambient atmosphere to supply ambient pressure adjacent said spindle seal, resulting in substantially no pressure difference across said spindle seal;

whereby upon spinning the disk and spindle a relatively low pressure volume substantially equal to ambient pressure will be generated within the enclosure volume adjacent the spindle seal at the location of the opening of the ventilation opening thereby causing the remainder of the enclosed volume to be maintained at a pressure above the surrounding ambient atmospheric pressure.

4,418,370

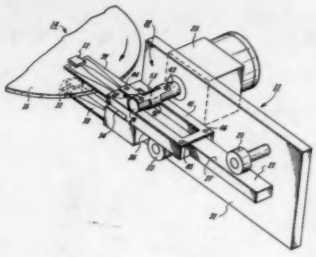
BAND DRIVE ACTUATOR

Joel N. Harrison, Campbell, Calif., assignor to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 100,580, Dec. 5, 1979, abandoned. This application Nov. 16, 1981, Ser. No. 321,866

Int. Cl.³ G11B *5/56*

U.S. Cl. 360—106 **7 Claims**



1. An actuator for a disk drive having a rotating recording medium, said actuator comprising the combination of

a head/carriage assembly;

a rolling suspension means for supporting said head/carriage assembly and for guiding said head/carriage assembly for translational movement radially relative to said recording medium; said suspension means including a capstan, a fixed precision positioning bearing, and a spring biased preload bearing; said preload bearing being biased against a substantially flat surface on one side of said said head/-carriage assembly to load a parallel surface on the opposite said of said head/carriage assembly against said capstan and said positioning bearing, whereby said suspension means constrains said head/carriage assembly against movement toward and away from said recording medium;

a precision bearing motor coupled to said capstan;

a nonextensible, tensioned band wrapped around said capstan, said band being secured at an intermediate point along its length to said capstan and having a pair of ends extending substantially tangentially in opposite directions from said capstan, the ends of said band being secured to spaced apart points on said head/carriage assembly, whereby said head/carriage assembly moves radially of said recording medium under the control of said motor, and

wherein said preload bearing is disposed between said capstan and said positioning bearing lengthwise of said head/-carriage assembly whereby the load forced applied to said capstan and said positioning bearing are substantially independent of the position of said head/carriage assembly radially relative to said recording medium.

4,418,371

ROLLING BIAS SPRING

Thomas J. Menden, Kenosha, Wis., assignor to Teletype Corporation, Skokie, Ill.

Filed Nov. 20, 1981, Ser. No. 323,169

Int. Cl.³ G11B *21/08, 5/56*

U.S. Cl. 360—106 **8 Claims**

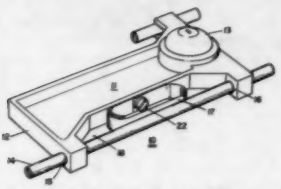
1. Linear positioning apparatus for a read/write head comprising:

a carriage having a frame for supporting the read/write head,

the carriage slidably mounted on one or more guide rods the

frame and said at least one guide rod forming a movable pocket therebetween,

a bias spring formed in a loop positioned in said pocket, and



means for affixing said spring to the frame whereby the spring rolls along the guide rod together with the movement of the carriage while exerting a separating force between the carriage and said guide rod.

4,418,372

MAGNETIC ROTARY ENCODER

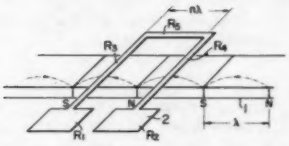
Hiroshi Hayashida, Mito; Tadashi Takahashi; Kunio Miyashita, both of Hitachi, and Kanji Kawakami, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 30, 1980, Ser. No. 173,842

Claims priority, application Japan, Aug. 2, 1979, 54-98070; Aug. 2, 1979, 54-98071; Sep. 5, 1979, 54-112959

Int. Cl.³ G11B *5/12, 5/30*

U.S. Cl. 360—113 **21 Claims**



1. A rotary magnetic encoder for use with a rotary body having plural pieces of magnetic information recorded on at least one circumferentially running track, said rotary magnetic encoder comprising at least one magnetoresistive element including at least two members extending substantially in the radial direction of said rotary body in a relation opposite to and overlying said magnetic information recorded on said track of said rotary body, two lead connection terminals formed at the outer ends of said radially extending members respectively, and a circumferentially extending member interconnecting said radially extending members at their ends, so as to form a signal path which passes both of said radially extending members and terminates in said two lead connection terminals, said lead connection terminals having at least portions thereof disposed outside of the outer peripheral edge of said rotary body, said rotary body being a magnetic recording medium and said pieces of magnetic information being arranged on said track with a predetermined pitch λ, said encoder further comprising a substrate having a surface disposed opposite to and at least partially overlying said rotary body, said magnetoresistive element being formed of a ferromagnetic material and provided on the surface of said substrate, said magnetoresistive element being formed on the surface of said substrate as an integral pattern, at least one of said radially extending members being a sensing member, and protective covering means provided on at least said radially extending members.

4,418,373

TAPE CASSETTE

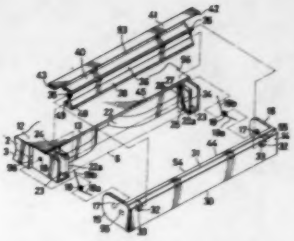
Tohru Fujimori, Tokyo, and Yoshino Kusui, Kawasaki, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 14, 1983, Ser. No. 457,903

Claims priority, application Japan, Jan. 25, 1982, 57-9459

Int. Cl.³ G11B *23/02*

U.S. Cl. 360—132 **8 Claims**



1. A tape cassette comprising:

a housing containing reels on which a supply of tape is wound and having first and second walls, an opening along one side of the housing and a cutout extending through said first and second walls and communicating with said opening along a portion of said opening, wherein said tape is guided between said reels in a path extending along said opening;

a front cover mounted on said housing and movable relative thereto between a closed position for covering said opening in front of said tape and an opened position for exposing said opening and the front of said tape, wherein an edge of said front cover, when said front cover is in said closed position, is disposed proximate to and spaced from an edge of said first wall of said housing at said cutout; and

an inner cover movable with said front cover wherein said inner cover is positioned behind said tape to enclose said tape between said inner cover and said front cover when said front cover is in said closed position and the back of said tape is exposed when said front cover is in said opened position so that said tape can be engaged through said cutout at said second wall for withdrawal of the tape through said opening, said inner cover having a lid portion rigidly secured thereto for spanning said edges of said front cover and said first wall of said housing to cover said cutout at said first wall when said front cover is in said closed position.

4,418,374

LATCH RELAY DRIVE CIRCUIT

John E. Callan, Milwaukee, Wis., assignor to Allen-Bradley Company, Milwaukee, Wis.

Filed Sep. 29, 1982, Ser. No. 427,567

Int. Cl.³ H01H *47/00*

U.S. Cl. 361—167 **7 Claims**

1. A drive circuit for energizing the set and reset coils of a latch-relay comprising:

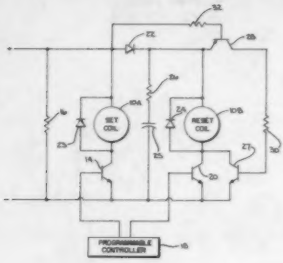
a source of potential;

a first electronic switch for coupling the set coil of the latch relay across said source of potential when said electronic switch is enabled so that the set coil is momentarily energized to set the latch-relay;

an energy storage device coupled across said source of potential for storing energy therein while the voltage magnitude of said source of potential is above a predetermined magnitude;

a second electronic switch for coupling the reset coil of the latch relay to said source of potential when said second electronic switch is rendered conductive to energize the reset coil to reset the latch relay; and

a switching circuit responsive to the voltage magnitude difference between said source of potential and the stored potential of said energy storage device for providing a completed circuit path between said energy storage device and the reset



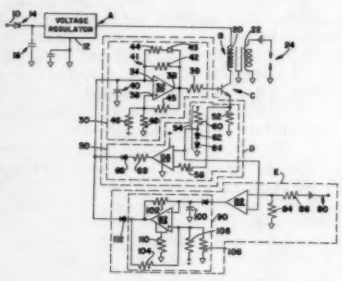
coil of the latch relay when the voltage of said source of potential drops below the stored potential of said energy storage device so that the reset coil is energized from the energy stored in said energy storage device to reset the latch relay.

4,418,375

SOLID STATE IGNITION SYSTEM

John W. Ober, Hiram, Ohio, assignor to Hunter Investment Company, Solon, Ohio

Filed Aug. 7, 1981, Ser. No. 291,069
Int. Cl.³ F23Q *3/00*
U.S. Cl. 361—253 **17 Claims**



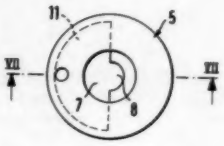
1. A multi-voltage ignition system comprising:
an ignition transformer having a primary winding which is adapted to be connected with a power supply and a secondary winding which is adapted to be connected with an ignition device;
switching means having current blocking and permitting states for blocking and permitting a flow of electrical current through the primary winding, the switching means being operatively connected with the primary winding;
an oscillator operatively connected with the switching means for cyclically causing the switching means to assume its current flow permitting and blocking states with a first frquency and a first duty cycle, such that the first frequency determines the periodicity with which current is permitted to flow and the first duty cycle determines a proportion of each first frequency cycle that current is permitted to flow;
current sensing means for sensing the magnitude of the primary winding current, the current sensing means being operatively connected with the primary winding; and,
comparing means for comparing the sensed current magnitude with a preselected magnitude, said comparing means being operatively connected with said current sensing means and being operatively connected with the oscillator to shorten the first duty cycle such that the switching means blocks current flow when the sensed current magnitude meets or exceeds the preselected magnitude, whereby the primary winding current is held substantially below the preselected magnitude over a range of potentials supplied by the power supply.

4,418,376

DISC TRIMMER

Gerd Bertl, Röthenbach, Fed. Rep. of Germany, assignor to Stettner & Co., Lauf, Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 437,041
Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142671
Int. Cl.³ H01G *5/06*
U.S. Cl. 361—293 **9 Claims**



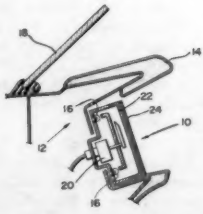
1. A disc trimmer comprising two segmented circular condenser plates, a dielectric member disposed between said two plates, and means for effecting relative rotations between said two plates, said dielectric member having a segmented circular configuration conforming to the segmented circular configuration of one of said plates with said one plate being formed as a covering on said dielectric member.

4,418,377

APPARATUS TO PREVENT REFLECTION OF VEHICLE INSTRUMENT PANEL ILLUMINATION LIGHT

Takeo Tamura, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 9, 1980, Ser. No. 185,645
Claims priority, application Japan, Sep. 20, 1979, 54-130989
Int. Cl.³ F21V *9/14*
U.S. Cl. 362—19 **10 Claims**



1. In a vehicle having a cabin, the combination of:
an instrument panel having a light emitting meter;
a windshield mounted forward of and adjacent said instrument panel;
a canopy mounted on said instrument panel which shades said meter and blocks the transmission of light from said meter to said windshield;
a side window oriented with respect to said meter so that light emitted from said meter impinges on said side window;

a polarizing filter adapted to polarize the light emitted from said meter to attenuate the reflection of the light impinging on said side window; and

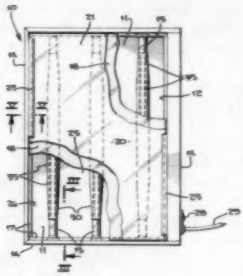
a non reflective surface disposed adjacent said side window for further attenuating the reflection of said light impinging on said side window.

4,418,378

LIGHT BOX

Sigurd A. Johnson, Glendora, Calif., assignor to Plan Hold Corporation, Irvine, Calif.

Filed Mar. 5, 1981, Ser. No. 240,851
Int. Cl.³ G09F *13/04*
U.S. Cl. 362—97 **10 Claims**



1. A light intensity modifying means for an elongated tubular light emitting source comprising:

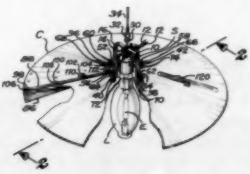
a tubular cylindrical member of sheet material having means for transmitting selected amounts of light therethrough along its length, having a central portion of substantially cylindrical shape transmitting a selected amount of light and adapted to be sleeved over the central cylindrical portion of said tubular light source, said light transmitting means providing progressively increased amounts of light to the ends of the tubular member with respect to the amount of light transmitted at the central portion of said tubular member, and whereby the amount of light emitted by said source and transmitted by said tubular member is reduced at said central portion and the amount of light transmitted at said end portions is progressively increased with respect to the reduced amount of light at said central portion to provide substantially uniform illumination.

4,418,379

HALIDE AND LIKE LIGHT REFLECTOR AND SOCKET ASSEMBLY FOR GREENHOUSE AND LIKE USE

Melvin J. De Marsh, 4306 SW. Juneau St., #11, Seattle, Wash. 98136

Filed Sep. 8, 1981, Ser. No. 299,673
Int. Cl.³ F21V *7/00*
U.S. Cl. 362—282 **8 Claims**



1. A reflector socket assembly for a high powered halide light or the like, especially adapted to enhance use thereof for effectively illuminating and promoting the growth of plants in a greenhouse or the like, said assembly comprising:

a frustoconically shaped reflector in the form of a simple cone, with the lower, concavical, reflecting surface thereof adjustable through a range of cone angles from about 76° to about 64° with respect to the center axis of the cone, said cone being of substantially unitary construction and fabricated from a centrally apertured disk, of nominally planar sheet stock, with a single small segment cut therefrom along cuts extending generally radially from the central aperture to the exterior edge of the disk, the radially extending edges thereof being joined to provide the conical condition of the reflector, and the adjustability of the reflector cone angle with respect to the cone axis being provided by varying the extent of overlap of the respective radial edges; and

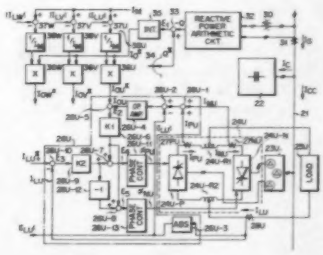
a lamp socket mounted coaxially of and slightly above and in spaced relationship with respect to the central aperture of the cone, with the light emitting element of a halide lamp or the like installed in the socket being substantially in the plane of the lower, outer edge of the reflector cone.

4,418,380

METHOD AND APPARATUS FOR CONTROLLING THE CIRCULATING CURRENT OF A CYCLOCONVERTER

Shigeru Tanaka, Tama, and Susumu Tadakuma, Yamato, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 24, 1981, Ser. No. 305,226
Int. Cl.³ H02P *13/30*; H02M *5/27*
U.S. Cl. 363—10 **2 Claims**



1. A control method for a reactive power compensating type cycloconverter wherein the lag reactive power of a connected AC power source system is controlled by controlling the circulating current of said cycloconverter which supplies a load current in each phase of a polyphase load and cancels the lead reactive power which is carried by a phase advancing capacitor connected to said AC power system, said reactive power compensating type cycloconverter controlling the reactive power of said AC power system, comprising the steps of:

deriving a circulating current command value in response to the reactive power of said AC power system;

compensating said circulating current command value in response to an absolute value of the load current of each phase;

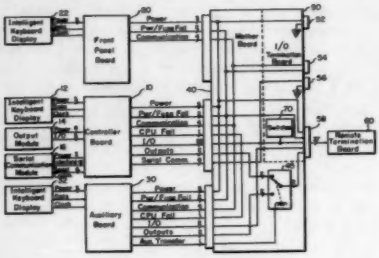
deriving a circulating current reference value for each phase of said circulating current type cycloconverter; and

controlling the circulating current of said cycloconverter in response to said load current.

4,418,381
SINGLE LOOP CONTROL SYSTEM

Anthony J. Molusis, Southington, and Thomas M. O'Loughlin, Milford, both of Conn., assignors to Bristol Babcock Inc., Waterbury, Conn.

Filed Jan. 23, 1981, Ser. No. 227,970
Int. Cl.³ G06F *15/46, 15/16*; G05B *11/42*
U.S. Cl. 364—131 **12 Claims**



11. A microprocessor based single loop control instrument comprising:

a first microprocessor,

a read only memory in which is stored an operating program for said first microprocessor, said program containing machine instructions sufficient to perform a single loop control PID algorithm using the tuning parameters KP, KI and KD which produces an output signal in response to at least a process variable and a setpoint,

a random access memory,

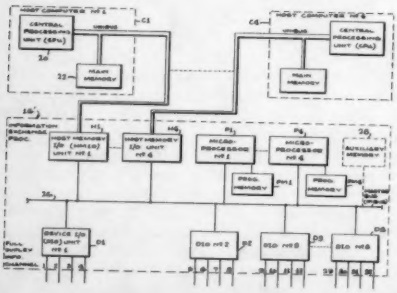
means for entering into said random access memory at least two sets of said tuning parameters and at least one breakpoint, and

means for selecting a tuning parameter from one set of tuning parameters or the other in accordance with whether a tuning variable is greater or lesser than said breakpoint.

4,418,382
INFORMATION EXCHANGE PROCESSOR

Kenneth N. Larson, Thousand Oaks; John S. Davis, Glendale, both of Calif., and Lewis M. Bostick, Honolulu, Hi., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 6, 1980, Ser. No. 147,252
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—200 **8 Claims**



1. In a data processing system having one or more host computers, each host computer having a central processing unit and an associated main memory, and a plurality of peripheral devices, each of said peripheral devices intended to communicate with one or more of said host computers or with one or more other peripheral devices, the improvement comprising an information exchange processor for responding to an input message from each host computer or each peripheral device via a shared or individual channel in accordance with a communication discipline defined for that channel, and for supplying a corresponding output message to one of said host computers or one of said peripheral devices on that or another channel in accordance with a communication discipline defined for that channel, said information exchange processor including:

a bus;

a host computer input/output channel;

at least one host memory input/output unit coupled to said bus for receiving data from or transmitting data to a host computer via said host computer input/output channel;

a plurality of device input/output channels;

a plurality of device input/output units coupled to said bus, each for communicating data from or to said peripheral devices via at least one of said device input/output channels; and

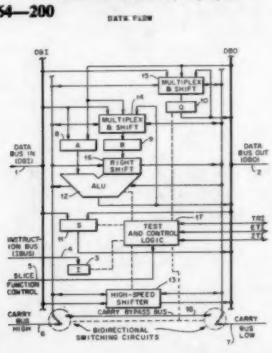
control means coupled to said bus and responsive to data supplied from said at least one host memory input/output unit or device input/output units for providing data to any one of said channels in accordance with a communication discipline defined for that channel and,

said control means comprising at least one processor, connected to said bus, having means for identifying device input/output units indicated to said processor, said processor performing said providing operation and controlling data flow between said at least one host memory input/out unit and said one or more dedicated device input/output units, or between said one or more dedicated device input-/output units.

4,418,383
DATA FLOW COMPONENT FOR PROCESSOR AND MICROPROCESSOR SYSTEMS

Donald E. Doyle, Delray Beach; George A. Hellwarth, Deerfield Beach, and Jack L. Quanstrom, Boca Raton, all of Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 30, 1980, Ser. No. 164,738
Int. Cl.³ G06F *1/00, 3/00*
U.S. Cl. 364—200 **2 Claims**



1. A data processing system utilizing data flow components, such system having a processor control unit for processing microinstructions, and generating instruction signals, a control memory interconnected with said processor control unit to supply said microinstructions thereto, signal lines for interconnecting said data flow components to conduct signals for performing arithmetic and logical functions on data in said system, and interface means for interfacing the aforesaid elements to other elements in said system, said system comprising:

a plurality of data flow components, each of said data flow

components including data registers and arithmetic and shift logic, each of said data flow components serving as a byte-wide slice and having a carry input circuit and a carry output circuit interconnected by way of a carry bypass bus, the carry input and carry output circuits in each data flow component comprising switching circuits controllable to route carry signals to and from their respective data flow component or to bypass carry signals around said respective data flow component, a test and control logic unit for providing test and control signals pertaining to said data flow components and responsive to instruction signals from said processor control unit to initiate and control said data flow component arithmetic and logic operations, said data flow components each being responsive to instruction signals from said processor control unit to perform one or more arithmetic and logic operations, such as add, subtract, divide, multiply, (including shift) data and status testing, and comparison testing, and each data flow component being operable in the following operating modes:

LB—Lowest Active Byte wherein a data flow component operates as least significant slice,

HB—Highest Active Byte wherein a data flow component operates as most significant slice,

CB—Central Active Byte wherein a data flow component operates as an intermediate slice between LB and HB, any position,

SAB—Standalone Byte wherein a data flow component operates as a single slice independently of all other slices,

NAB—Non-Active Byte wherein a data flow component is not active but, by way of said carry bypass bus, serves as a transmission link between data flow components that are active slices,

a carry bus, said carry bus being connected to selected ones of said carry inputs and carry outputs of said data flow components to transfer shift and arithmetic carry information;

an instruction bus for supplying instruction signals from said processor control unit simultaneously to all of said data flow components for controlling their operation;

a plurality of data buses interconnected to convey full width data signals in said system among said processor control unit, said data flow components and other elements in said system, each of said data flow components serving a predetermined portion or "slice" of each data bus and the number of "slices" determining the total width of the data bus;

a control bus interconnected between said processor control unit and each of said data flow components to provide signals for communication between components and for control purposes, and also to convey signals representative of test result information from individual data flow components to said processor control unit, each line of said control bus being connected to said data flow components so that it can be activated by any component and so that its state can be sensed by any component or by the processor control unit whereby a small number of lines serves the control requirements of a large variety of commands or instructions;

a slice function control bus including a set of encoded control lines interconnected to each data flow component and providing slice status signals to each data flow component responsive to status signals from said processor control unit to establish the status of each data flow component in accordance with said operating modes whereby said system can utilize said slices in:

(1) multiple-slice active combined operations of all slices,

(2) active standalone operation of any selected slice,

(3) multiple-slice operation of any active subset of less than the total number of available slices in any combination with selected ones of said slices being non-active and serving only as a transmission link between active slices.

4,418,384

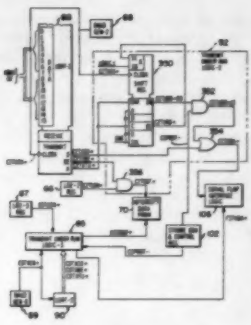
COMMUNICATION SUBSYSTEM WITH AN AUTOMATIC ABORT TRANSMISSION UPON TRANSMIT UNDERRUN

Thomas O. Holtey, Newton, Mass.; Richard P. Kelly, Nashua, N.H.; Steven S. Noyes, Boylston, and James C. Raymond, Framingham, both of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Oct. 6, 1980, Ser. No. 194,655

Int. Cl.³ G06F *3/00, 11/06*

U.S. Cl. 364—200 **6 Claims**



1. In combination with a data processing system comprising a system bus, at least one central processing unit (CPU), one main memory, one peripheral controller, each individually coupled to said system bus, a communications subsystem also coupled to said system bus, said communications subsystem including a communications controller coupled to said system bus and also including typical communication devices such as a modem, a dialing unit and a touch-tone receiver coupled to said communications controller, said communications controller controlling the receipt and transmission of messages by said data processing system, said communications controller comprising:

(a) a microprocessor coupled to main memory for receiving a data byte of information from said main memory;

(b) a universal synchronous receiver transmitter (USRT) coupled to said microprocessor for receiving the data byte of information from said microprocessor, said USRT further generating an underrun signal and a series of flag byte signals when said microprocessor fails to transmit a data byte to said USRT within a predetermined time interval; and

(c) first means responsive to said underrun signal for generating a predetermined signal and superimposing the predetermined signal on one of the series of flag byte signals thereby generating an abort sequence of a predetermined number of binary ONE bits.

4,418,385

METHOD AND DEVICE FOR ARBITRATION OF ACCESS CONFLICTS BETWEEN AN ASYNCHRONOUS TRAP AND A PROGRAM IN A CRITICAL SECTION

Jean-Marie Bourrez, Versailles, France, assignor to CII Honeywell Bull, Paris, France

Filed Jan. 22, 1981, Ser. No. 227,223

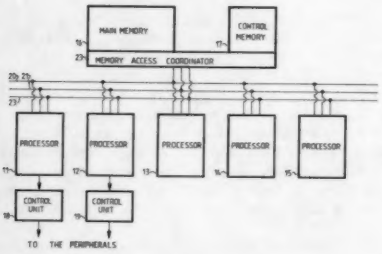
Claims priority, application France, Jan. 22, 1980, 80 01350

Int. Cl.³ G06F *13/00*

U.S. Cl. 364—200 **6 Claims**

1. A method of arbitrating attempts in a data processing system to requisition a process able to have operating phases in critical sections, the system including a program, a resource being defined as critical when it is the only resource of its type in the system, an operating phase being in a critical section

when a portion of the program of the system being implemented mobilizes a critical resource, a process being defined as operating in a critical mode when the process is monopolizing a critical resource, the arbitrating method being performed in response to one or more asynchronous traps, wherein there are initially: predetermined hierarchical classifications of critical modes, each of said classifications of critical modes being defined as a function of at least one resource causing a process to operate in a critical mode; for each of the critical mode classifications, an indicator denoting occupation of the critical mode classification being allocated, the critical mode classification occupation indicators being set at zero before implementation of the method, each asynchronous trap being allocated a requisitioning capability defined by a utilization system as a function of a status of the asynchronous trap; an asynchronous trap presence indicator being allocated for each of said requisitioning capabilities; a hierarchical relationship being defined according to precedence among the critical mode classifications and the requisitioning capabilities of the asynchronous traps, the hierarchical relationship unequivocally determining in the presence of an asynchronous trap whether this asynchronous trap should either be complied with or stored, with a view to performance of this asynchronous trap upon disappearance of the critical mode classifications tending to prevent the performance of this asynchronous trap; the



method being at least partly performed with a system including an arbitration network comprising the steps of operating the system by: setting the indicator denoting occupation of the corresponding critical mode classification to a one state each time the process progresses so it enters into a critical operating phase, said critical mode classification occupation indicator then being defined as armed; resetting the critical classification occupation indicator to zero to indicate occupation of the corresponding critical mode classification, said critical mode classification occupation indicator then being defined as unarmed; in response to the presence of an asynchronous trap, setting the trap presence indicator corresponding to the capability of the asynchronous trap to a state of one, said asynchronous trap presence indicator then being defined as occupied; resetting to zero the asynchronous trap presence indicator corresponding to each executed asynchronous trap each time there is compliance with an asynchronous trap, said asynchronous trap presence indicator being defined as vacant when it is reset to zero; the arbitration network: comparing the levels of the critical mode classifications corresponding to the armed critical mode classification occupation indicators with levels for the capabilities of the asynchronous traps corresponding to the occupied asynchronous trap presence indicators; said arbitration network authorizing discharge of the asynchronous traps having an allocated capability level greater than the armed critical classifications.

4,418,386

COMMUNICATION BUS FOR A MULTI-SOURCE/RECEIVER DATA PROCESSING SYSTEM

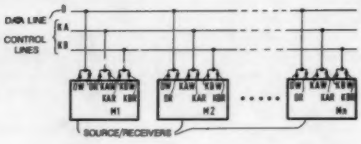
Hendrik Vrielink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 20, 1981, Ser. No. 255,916

Claims priority, application Netherlands, Apr. 23, 1980, 8002346

Int. Cl.³ G06F *3/00*

U.S. Cl. 364—200 **18 Claims**



1. A multi-source/receiver data processing system in which at least one data source and at least one data receiver are connected to a communication bus which consists of at least one transfer medium suitable for the transport of at least one logic level from a source to a receiver both being active participants, characterized in that:

the system includes a plurality of clock signal generators having different frequencies;

in a source and/or a receiver, determining means (HS) to effect a communication for determining between all sources and/or receivers (Mi) which actively participate in an action concerning a communication whether said bus (C) is ready for executing said action, said means (HS) comprising:

first and second detecting means whereby it can be determined that during a first and a second period of time, respectively, the communication bus is ready for said action, the first period of time being smaller than the second period of time, the first period of time being determined by a preparation time factor of a first active participant, the second period of time being the largest product (R·V) of the set of products (Ri·Vi) of all potential active participants, the product (Ri·Vi) being formed per active participant by a frequency tolerance factor (Ri) of the clock signal generator for the active participant and a response time factor (Vi) of this active participant; such that

when an active participant detects that the second period of time has expired, the bus is ready for executing an action and can thus be occupied by this action for this active participant and all further active participants which have also detected, at least during their relevant first period of time, that the bus is ready.

4,418,387

METHOD OF RECONSTRUCTING A COMPUTED TOMOGRAPHIC IMAGE FROM A SINGLE X-RAY PROJECTION

Shoichiro Yamaguchi, and Fujio Kobayashi, both of Tokyo, Japan, assignors to The President of Tokyo Institute of Technology, Tokyo, Japan

Filed Sep. 12, 1980, Ser. No. 186,425

Claims priority, application Japan, Sep. 18, 1979, 54-119927; Nov. 20, 1979, 54-150218; Nov. 21, 1979, 54-151286; Nov. 21, 1979, 54-151287

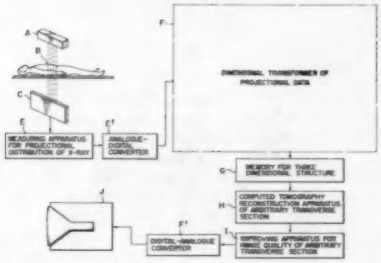
Int. Cl.³ G06F *15/42*

U.S. Cl. 364—414 **8 Claims**

1. A reconstruction method of a computed tomographic image from a single X-ray projection comprising:

(a) measuring each of the values d_k (k is a natural number) of

X-ray density on a single X-ray projectional distribution produced by projecting X-rays from a desired direction toward X-ray tested tissue of a body at a plurality of positions spaced apart from each other from one end of said projectional distribution toward the other end thereof, where said plurality of positions spaced apart from each other for measurement of the values d_i of X-ray density are selected according to the following two criteria (i) that the tomographic plane of the X-ray tested tissue of a body to be reconstructed is expressed by a pseudo-tomographic plane which is constituted collectively by mn pieces of picture elements, with m pieces of picture elements in a row and n in a column (both m and n are natural numbers), which are formed by dividing said tomographic plane of the X-ray tested tissue of a body into small sections and each of which has a single piece of X-ray density information, and that said pseudo-tomographic plane is placed between an X-ray source and said single X-ray projectional distribution, (ii) that n rows, each of which is constituted by m pieces of picture elements are numbered in order 1,2,. . . ,n from the left and that said m pieces of picture elements in each row are numbered respectively 1,2, . . . ,m; m+1,m+2, . . . ,2m; . . . ; (n−1)m+1, (n−1)m+2, . . . ,mn from the side of said X-ray source toward the side of said single X-ray projectional distribution in order and that a plurality of X-ray beams passing through said pseudo-tomographic plane include X-ray beams numbering mn, each of which passes through a left lower corner of a corresponding picture element of said mn picture elements, said plurality of positions spaced apart from each other on the single X-ray projectional distribution for measurement of the values d_i of X-ray density correspond to the positions on said single X-ray projectional distribution which have X-ray density information to be obtained by said X-ray beams' passing through said pseudo-tomographic plane based on criteria (i) and (ii);



(b) calculating the X-ray absorption coefficient μ_t (t=1,2,3, . . . ,mn, and t is natural number) of each of the mn pieces of picture elements based on the values d_i of X-ray density measured in step (a) and the length of the X-ray beams passing through each picture element;

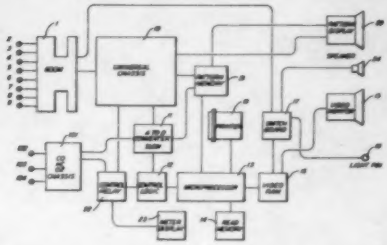
(c) reconstructing the computed tomographic image of said X-ray tested tissue of a body, where the picture elements having respectively X-ray absorption coefficients μ_1, μ_2, . . . μ_{mn} calculated in step (b) are positioned at the locations of said picture elements numbered 1,2, . . . , mn of the pseudo-tomographic plane and wherein the complete collection of picture elements located in the m×n array constitute the reconstructed computed tomographic plane of the X-ray tested tissue of a body.

4,418,388

ENGINE WAVEFORM PATTERN ANALYZER

Clarence B. Allgor, Portage; Clair J. St. Clair, Otsego, and Richard A. Pearson, Kalamazoo, all of Mich., assignors to The Allen Group Inc., Melville, N.Y.

Filed Aug. 14, 1980, Ser. No. 178,187
Int. Cl.³ G01M *15/00*
U.S. Cl. 364—431.01 **42 Claims**



1. Apparatus for electrically storing substantially a time-varying operating parameter of an internal combustion engine comprising:

electrical signal means adapted to be coupled to the engine for providing a time-varying electrical signal related to the time-varying operating parameter,

converting means coupled to the electrical signal means for converting the time-varying electrical signal to a series of digital signals representing discrete magnitudes of the time-varying electrical signal at temporally spaced intervals,

storing means coupled to the converting means for storing digital signals, and

control means coupled to the storing means for causing digital signals from the converting means representing discrete magnitudes of the time-varying electrical signal at temporally spaced intervals which are determined by the control means in accordance with an operating parameter of the internal combustion engine other than said time-varying operating parameter being electrically stored; to be stored in said storing means, and for causing reading of the stored digital signals out of the storing means.

4,418,389

PRODUCT-TO-FREQUENCY CONVERTER

Alain Finet, Newbury, and Louis R. Nerone, Cleveland, both of Ohio, assignors to Stock Equipment Company, Chagrin Falls, Ohio

Filed Dec. 12, 1980, Ser. No. 215,817
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—478 **20 Claims**

1. A product-to-frequency converter comprising:

first signal-generating means providing a continuous DC signal with a varying amplitude constituting a multiplicand value;

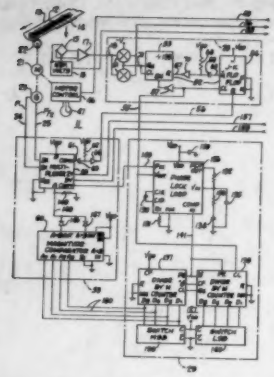
second signal-generating means providing a first periodic pulse signal whose frequency constitutes a multiplier value, the pulses constituting said first periodic pulse signal each being of predetermined duration;

multiplying means providing, in response to said DC signal and said first periodic pulse signal, a product value constituted by a second periodic pulse signal having a frequency equivalent to said first periodic pulse signal, a peak amplitude equivalent to said DC signal, and a pulse duration equivalent to said predetermined duration;

a voltage-controlled oscillator means having an input, and an output; and

means responsive to said second periodic pulse signal for providing a signal to the input of said voltage-controlled oscillator means, said output providing a third periodic

pulse signal of a frequency proportional to said product value, said third periodic pulse signal remaining constant



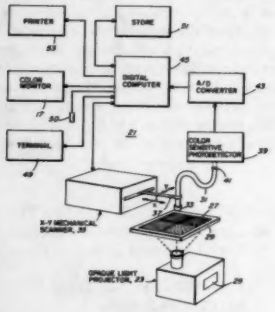
when said DC amplitude varies in inverse proportion to a change in the frequency of said second periodic pulse signal.

4,418,390

METHOD AND APPARATUS FOR MAKING A CODED CHART OF A COLOR SUBJECT

Rhoda J. Smith, 47 Basswood Ave., Sudbury, Mass. 01776, and Harold H. Smith, 6021 Commack Ct., Springfield, Va. 22152

Filed Nov. 24, 1980, Ser. No. 209,537
Int. Cl.³ G06K *15/02*; H04N *9/10, 7/18*
U.S. Cl. 364—526 **5 Claims**



2. Apparatus for use in making a coded chart of a color subject for use in creating a likeness of said subject by needleworking on a mesh canvas, said mesh canvas having a plurality of holes, said subject being characterized by an array of picture elements, said apparatus comprising:

a. means for forming a color image of said color subject,

b. photopickup means,

c. means for causing said photopickup means to scan said color image,

d. means for measuring the color content of the light received by the photopickup means as it scans said color image,

e. means for converting the color content signals into digital signals,

f. a computer for processing said digital signals to determine the proper color needlecraft material to use for each hole in said mesh canvas, and

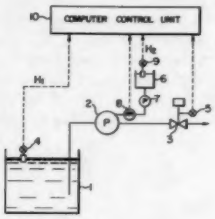
g. a printer for making a printout of the color information so obtained, said printout being in the form of an image of the subject, with each picture element in the image corresponding to a single hole in said mesh canvas and appearing as a symbol corresponding to its particular color.

4,418,391

METHOD OF INSPECTING OPERATION OF DRIVING SYSTEM INCLUDING A MAIN MACHINE AND A PLURALITY OF AUXILIARY MACHINES, AND DRIVING SYSTEM INCORPORATING INSPECTION APPARATUS FOR CARRYING OUT THE INSPECTION METHOD

Yoshikatsu Asada, and Shunji Mori, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Oct. 3, 1980, Ser. No. 193,444
Claims priority, application Japan, Oct. 5, 1979, 54-127955
Int. Cl.³ G06F *11/30*
U.S. Cl. 364—551 **8 Claims**



1. A method of inspecting at set time intervals a driving system having a main machine and a plurality of auxiliary machines, said main machine being so controlled as to be started only when the function of every auxiliary machine is satisfactory, said method including the steps of:

i. sequentially checking the function of all of said auxiliary machines without interruption to detect a malfunction of any auxiliary machine, in response to which an indication of a malfunction of said auxiliary machine is produced and a main machine locking signal is produced;

ii. checking the function of said main machine if said main machine locking signal is not generated; and then

iii. correcting any malfunction in an auxiliary and the main machine.

4,418,392

MEASURING DEVICE

Yoogo Hata, Otawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 23, 1981, Ser. No. 276,527
Claims priority, application Japan, Jun. 26, 1980, 55-85909
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—571 **2 Claims**

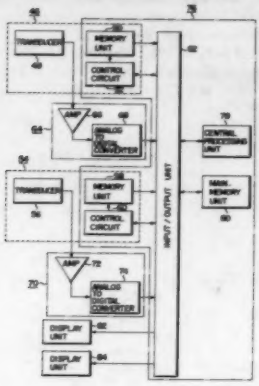
1. A measuring apparatus comprising:

a. measuring means including a plurality of transducers for measuring a plurality of different data and converting the measured data into analog electrical signals;

b. analog-digital converting means connected to the measuring means to convert analog electric signals from the measuring means into digital signals;

c. correction means connected to the analog-digital converting means for storing a plurality of different correction data for the plurality of measured data, for correcting each of the measured data using the corresponding correction data, and for further correcting a first of the corrected measured data using a second of the corrected measured data, said first corrected measured data being a function of at least two variable factors and said second corrected measured data being a function of at least one variable

factor and being one of said at least two variable factors of said first corrected measured data; and



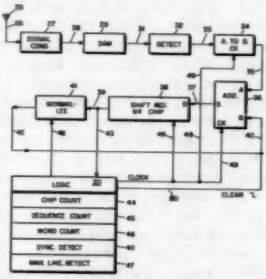
d. display means connected to the correcting means for displaying corrected measured data.

4,418,393

MATCHED FILTER SPREAD SPECTRUM CODE RECOVERY APPARATUS

John W. Zscheile, Jr., Murray, Utah, assignor to Sperry Corporation, New York, N.Y.

Filed Oct. 27, 1980, Ser. No. 200,827
Int. Cl.³ G06F 15/31
U.S. Cl. 364—724 **8 Claims**



1. Apparatus for receiving and decoding a transmitted coded message where the coded message is a modulated signal comprising a multibit data word converted into a spread spectrum code having a unique sequence of chips preceded by a sync signal and where the unique sequence of chips define a plurality of identical sequence groups each representative of said multibit data word, the combination comprising:

means for receiving said sync signal and said sequence groups of chips,

means for processing said sync signal and said groups of chips coupled to said receiving means to provide a time base signal and processed chips,

a tapped delay line device coupled to said sync signal and said processed chips, said tapped delay line device having a chip length sufficient to accommodate one sequence group,

means for detecting the output of said tapped delay line device at each chip time,

means for converting the detected output of said tapped delay line device to a digital value at each chip time,

shift register means coupled to said converting means being adapted to store said digital values at each chip time in the order of detection,

logic means comprising a plurality of counters and maximum value detector means,

said logic means being coupled to the output of said shift register means for detecting said sync signal and starting said plurality of counters,

one of said counters being adapted to keep a sequence group count and another of said counters being adapted to keep a chip position count as said digital values are shifted through said shift register means,

adder means connected to said converting means and to said shift register means for summing the digital value of the output of said device at each chip time with the digital value stored in said shift register means representative of the same chip time of the previously detected sequence group, and

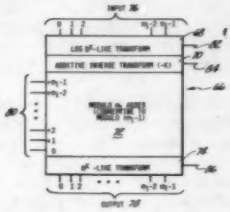
said maximum value detector means in said logic means coupled to the output of said shift register means for detecting the chip position in said sequence group having the largest digital value stored in said shift register means, whereby the largest digital value chip position in said sequence group is indicative of a unique multibit data word.

4,418,394

OPTICAL RESIDUE ARITHMETIC COMPUTER HAVING PROGRAMMABLE COMPUTATION MODULE

Anthony M. Tai, Plymouth, Mich., assignor to Environmental Research Institute of Michigan

Filed Aug. 13, 1980, Ser. No. 177,953
Int. Cl.³ G06F 7/72
U.S. Cl. 364—746 **23 Claims**



1. A computation module for generating a function of two residues in the residue number system, comprising:

an array of light switches arranged in a plurality of rows, each of said light switches having a light receiving input and a light delivering output,

first input means for inputting a light signal into one of said light switches in said first row thereof as a function of a first of said two residues,

the last of said plurality of rows of light switches including output means for outputting a light signal from said module at a position which is a function of said two residues,

a plurality of light transmission paths interconnecting said rows of light switches to define a plurality of light transmitting channels between said first input means and said output means,

second input means for inputting electrical signals into said module as a function of the second of said two residues, and

switching means responsive to said second input means for switching all the light switches in a particular one of said rows thereof determined by the identity of said second of said two residues, whereby said light signal is channeled through the array and is output from said output means at

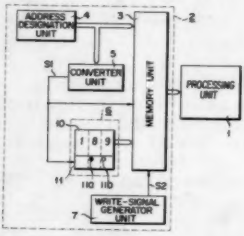
said position corresponding to the function of said two residues.

4,418,395

DIGITAL DATA PROCESSING SYSTEM WITH A VALUE SETTING UNIT FOR PROTECTING AND CONTROLLING AN ELECTRIC POWER SYSTEM

Junichi Inagaki, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 12, 1980, Ser. No. 129,647
Claims priority, application Japan, Mar. 28, 1979, 54-36738
Int. Cl.³ G06F *15/56*
U.S. Cl. 364—900 **8 Claims**



1. A digital data processing system for protecting and controlling an electric system, comprising;

a setting section for setting a plurality of data values, comprising,

an address designation unit for generating address signals corresponding to respective of the data values,

a converter unit connected to receive the address signals for generating predetermined decimal point signals in correspondence to respective of the addres signals,

numerical data input means for generating numerical data signals representative of said data values and characterized by a predetermined number of digits, said data signals associated with respective of said address signals, each decimal point signal generated by said converter unit defining a predetermined position of a decimal point within said digits of a respective data signal,

decimal point display means connected to said converter unit and receiving therefrom said decimal point signals for displaying for each decimal point signal a position of a decimal point corresponding thereto, said decimal point display means being provided between said digits of said numerical data input means,

a write-signal generator unit for generating a write-signal, and

a memory unit connected to receive the address signals, decimal point signals, data signals and write-signal for storing each decimal point signal and each respective data signal at a respective address designated by the address signals, in response to the write-signal; and,

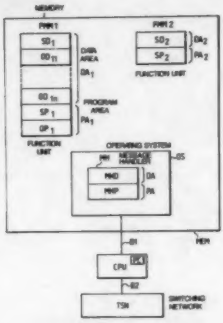
a processing unit connected to said memory unit for reading said plurality of data signals and decimal point signals from the memory unit and processing the corresponding data values to protect and control the electric system based thereon.

4,418,396

SIGNALLING SYSTEM

Goran A. H. Hemdal, Sint-Genesius Rode, and Jonny S. Jager, Brussels, both of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed May 1, 1980, Ser. No. 145,394
Claims priority, application Belgium, May 4, 1979, 57773
Int. Cl.³ G06F *3/00*
U.S. Cl. 364—900 **5 Claims**



1. In an electronic communication system for processing calls between terminals of the system in response to call processing signals from calling ones of said terminals, said system comprising a processor, a memory associated with said processor for storing messages for controlling the processing of said calls through the system, said memory comprised of a plurality of modular function units for furthering the processing of calls through the system, in which each of said function units comprises message data storage and program storage areas, each program storage area comprising receiving and transmitting procedure instructions for the message data storage area of the same function unit, and in which the processing of calls comprises the transmission of call control messages generated in one function unit between data storage areas of different function units in response to signals directed to said memory from system terminals, the improvement comprising a first and a second type of data messages stored in the message areas of the units, the data messages of the first type in which the message includes indentification of a destination function unit for the message and data messages of the second type in which the destination function unit for the message is not specified in the message, and in which each unit includes a message handler for controlling the transmission of messages of the second type, each said message handler comprising a routing table containing destination unit identification to which reference is made to determine the destination unit for a message of the second type for transmission thereto of that message.

4,418,397

ADDRESS DECODE SYSTEM

George L. Brantingham, Lubbock, Tex., and Warren S. Graber, St. Joseph, Mich., assignors to Texas Instruments Incorporated, Dallas, Tex.

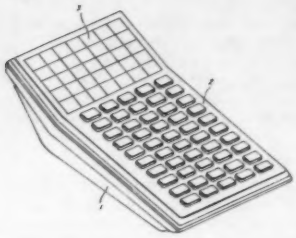
Filed May 29, 1980, Ser. No. 154,339
Int. Cl.³ G06F *3/00*; H03K *13/00*
U.S. Cl. 364—900 **5 Claims**

1. A circuit having non-complementary address inputs comprising:

(i) first decode means for receiving address inputs for selectively providing an active first decode output in response to decoding a first logic level in a predefined combination from said received address inputs; and

(ii) second decode means coupled to said first decode means for receiving said address inputs for selectively providing an

active second decode output in response to decoding a second logic level in the predefined combination from said received address inputs and in response to receiving the active first decode output from said first decode means, whereby said active second decode output is indicative of



the address inputs corresponding to the predefined combination.

2. The circuit of claim 1 wherein the first and second decode means are programmable to allow selection of the desired predefined combination.

4,418,398

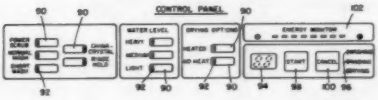
MANUAL RESET CONTROL CIRCUIT FOR MICROPROCESSOR CONTROLLED WASHING APPLIANCE

Richard E. Hornung, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Continuation of Ser. No. 71,964, Sep. 4, 1979, abandoned. This application Jun. 10, 1982, Ser. No. 387,134

Int. Cl.³ G06F *15/46*

U.S. Cl. 364—900 **9 Claims**



1. In a washing appliance having means for performing a plurality of operating functions including a drain function, a control circuit adapted for energization from an external power supply, said control circuit comprising:

a microprocessor for controlling said plurality of function performing means to provide a plurality of operating modes including a drain mode in which the drain function is performed, and an idle mode in which no operating functions are performed, said microprocessor including a reset port and an input port, said microprocessor being constructed and arranged to assume a reset state thereby interrupting appliance operation, whenever a reset signal is present at its reset port at any time during appliance operation;

means for generating an internal reset signal of limited duration and applying said internal reset signal to said reset port in response to restoration of power from the external supply following an interruption thereof;

manually operable reset switch means having an actuated state and a deactuated state;

means for generating a manual reset signal responsive to said reset switch means and operative to apply said manual reset signal to said reset port when said reset switch means is in its actuated state and to remove said manual reset signal when said reset switch means resumes its deactuated state;

means for generating an initiating signal in response to said manual reset signal and operative to maintain said initiating signal at said input port for a predetermined period following removal of said manual reset signal from said reset port;

said microprocessor being further constructed and arranged to scan said input port for the presence of an initiating signal following removal of a reset signal from its reset port and operative to initiate a first predetermined one of said operating modes if said initiating signal is detected and to initiate a second predetermined one of said operating modes otherwise;

whereby in response to a manual reset appliance operation is interrupted and a first predetermined one of the operating modes is initiated and in response to an internal reset, a second predetermined one of the operating modes is initiated.

4,418,399

SEMICONDUCTOR MEMORY SYSTEM

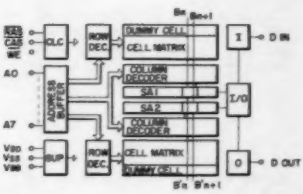
Junji Sakurai, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 15, 1980, Ser. No. 216,674

Claims priority, application Japan, Dec. 13, 1979, 54-162079

Int. Cl.³ G11C *5/02, 7/00, 11/24*

U.S. Cl. 365—51 **18 Claims**



1. A semiconductor memory system comprising:

a memory matrix area having a row direction and a column direction at an angle with said row direction, said matrix area comprising conductors, a first set of said conductors arranged in said row direction and a second set of said conductors arranged in said column direction, each conductor having a plurality of potentials, and said memory matrix area further comprising memory cells arranged at the intersections of said conductors,

peripheral circuits arranged adjacent to said memory matrix area, and being operatively connected to respective ones of said conductors, a predetermined number of said peripheral circuits being sequentially arranged along a first direction comprising one of the row direction and the column direction such that at least some of said predetermined number of peripheral circuits are substantially arranged in files extending in a direction perpendicular to said first direction.

4,418,400

DATA TRACK FOR CROSS TIE WALL MEMORY SYSTEM

Gregory J. Cosimini, St. Paul; David S. Lo, Burnsville, and Maynard C. Paul, Bloomington, all of Minn., assignors to Sperry Corporation, New York, N.Y.

Filed Dec. 22, 1980, Ser. No. 218,993

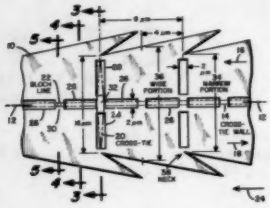
Int. Cl.³ G11C *19/08*

U.S. Cl. 365—87 **5 Claims**

1. In a magnetic memory system in which binary data are stored as inverted Neel wall sections about the Bloch-lines of associated cross-tie, Bloch-line pairs, which cross-tie, Bloch-line pairs are generated in and are serially propagated downstream along a cross-tie wall in a magnetizable layer by appropriate drive fields, said magnetizable layer being configured into a data track forming strip whose two opposing edges are

formed into mirror-imaged, uniformly spaced, repetitive patterns of asymmetrically shaped edges which repetitive patterns are formed of successive narrow portions, forming wide portions therebetween, and which are formed about the geometric centerline of the data track for establishing said cross-tie wall along said geometric centerline and structuring each of said cross-ties along said cross-tie wall and at a narrow portion of said data track and the associated Bloch-line at the next adjacent downstream wide portion of said data track, the improvement comprising:

forming a plurality of energy wells along the geometric centerline of said data track but not in the areas of said



narrow portions and said wide portions where said cross-ties and said Bloch-lines, respectively, are stored;

forming a plurality of energy wells transverse said geometric centerline in the areas of said narrow portions where said cross-ties are stored but not in the areas of said geometric centerline;

forming a continuous cross-tie wall along said geometric centerline and within said plurality of energy wells that are formed along said geometric centerline; and,

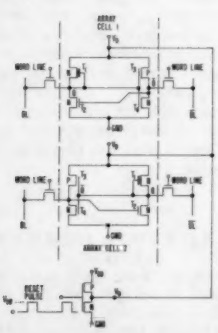
forming two large domains of opposite polarity on opposite sides of said continuous cross-tie wall, the polarities of which are parallel to said continuous cross-tie wall.

4,418,401

LATENT IMAGE RAM CELL

Jai P. Bansal, Manassas, Va., assignor to IBM Corporation, Armonk, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,314
Int. Cl.³ G11C *17/00, 11/40*
U.S. Cl. 365—95 **2 Claims**



1. A latent image storage cell, comprising:

an N channel depletion mode load FET device having its drain/source path connected between a pulsed drain voltage and a first node, having its gate connected to said first node;

a first N channel enhancement mode FET device having its drain/source path connected between said first node and ground potential, and its gate connected to a second node;

a P channel enhancement mode FET device having its drain/source path connected between said pulsed drain voltage and said second node, and its gate connected to said first node;

a second N channel enhancement mode FET device having its source/drain path connected between said second node and said ground potential, and having its gate connected to said first node;

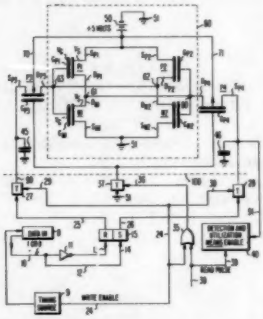
said first node charging up faster than said second node when said pulsed drain voltage turns on, providing a latent image operation for the circuit, the circuit operating as a RAM circuit by selectively applying positive or ground potential to said first or said second node to dynamically store a selected binary state in the circuit.

4,418,402

RADIATION HARDENED ACCESSIBLE MEMORY

William F. Heagerty, Norristown, Pa.; Gerald T. Caracciolo, Trenton, and William F. Gehweiler, Moorestown, both of N.J., assignors to RCA Corporation, New York, N.Y.

Filed May 13, 1981, Ser. No. 263,124
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—156 **4 Claims**



1. In combination with a bistable device comprised of N and P-type devices, and having first and second input terminals, and responsive to high and low level signals or to low and high level signals supplied to said first and second input terminals, respectively, to assume its first or second state, respectively, accessing means for supplying high and low signal levels or low and high signal levels to said first and second input terminals, respectively, and comprising:

first and second P-type devices each having a drain electrode connected to one of said input terminals, a source electrode, and a gate electrode, and responsive to enabling and disabling voltages applied across said gate electrode and said source electrode to supply said high level signal or said low level signal, respectively, to said one of said input terminals;

means for generating a control signal having first and second levels;

logic means responsive to the first level of said control signal to generate and supply said enabling and disabling signals to said first and second P-type devices respectively, and responsive to said second level of said control signal to generate and supply said enabling and disabling signals to said second and first P-type devices, respectively;

means for supplying a reference potential to the gate electrodes of said first and second P-type devices when said enabling and disabling voltages are supplied to said first and second P-type devices; and

means for sensing the state of said bistable device comprising:

capacitor means connected between said source electrodes of said first and second P-type devices and said reference potential; and

means for detecting the potential across said capacitor means during a time period between successive level changes of said control signal.

4,418,403

SEMICONDUCTOR MEMORY CELL MARGIN TEST CIRCUIT

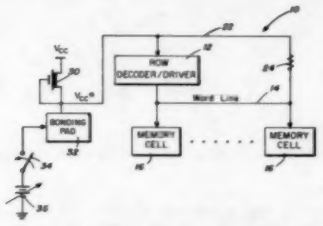
James E. O'Toole, and Robert J. Proebsting, both of Carrollton, Tex., assignors to Mostek Corporation, Carrollton, Tex.

PCT No. PCT/US81/00136, § 371 Date Feb. 2, 1981, § 102(e) Date Feb. 2, 1981, PCT Pub. No. WO82/02792, PCT Pub. Date Aug. 19, 1982

PCT Filed Feb. 2, 1981, Ser. No. 275,057

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—201 **5 Claims**



1. A margin testing circuit for a semiconductor memory circuit having a plurality of memory cells, the memory cells being arranged in rows and those memory cells along one row being connected to a word signal line and the semiconductor memory circuit operating at a supply voltage, comprising:

means interconnected to a word signal line for varying the voltage applied to a word signal line without varying the supply voltage to test for proper functioning of the memory cells along a row of the semiconductor memory circuit while operating with reduced voltage on the selected word signal line.

4,418,404

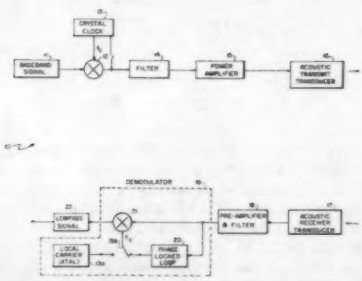
SINGLE-SIDEBAND ACOUSTIC TELEMETRY

Alan Gordon; Stanley J. Watson; Steven J. Cowen; Gerald Mackelburg, all of San Diego, and Brett D. Castile, Del Mar, all of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 1, 1981, Ser. No. 307,403

Int. Cl.³ H04B *1/74, 11/00*

U.S. Cl. 367—132 **5 Claims**



1. An apparatus for undersea transmitting and receiving comprising:

a first crystal clock for generating a carrier signal between eight and forty Khz;

means for providing an acoustic baseband information signal;

means coupled to the generating means and the providing means for shifting the acoustic baseband information signal to a frequency determined by the carrier signal;

means for passing signals made up of at least a single sideband of the acoustic baseband information modulation carrier signal;

means for transmitting the passed signals through a water medium;

means for receiving remotely originating signals in the water disposed near the transmitting means, the remotely originating signals being single sideband modulated signals and sideband signals along with a carrier signal;

means coupled to the receiving means for synchronously and asynchronously demodulating the remotely originating signals into an information signal;

a second crystal clock coupled to the demodulating means and generating substantially the same signal as the carrier signal for the first crystal clock to provide a demodulating signal when operating in the asynchronous mode; and

a phase lock loop coupled to the demodulating means to provide a demodulating signal when operating in the synchronous mode.

4,418,405

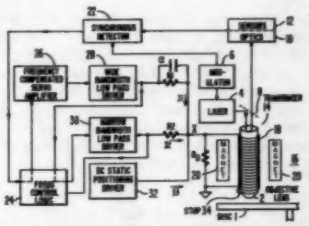
LENS POSITIONING CONTROLLER FOR OPTICAL PLAYBACK APPARATUS

William E. Barnette, Levittown, Pa., and Robert W. Jehest, Skillman, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Jun. 29, 1981, Ser. No. 278,452

Int. Cl.³ G11B *7/12*

U.S. Cl. 369—45 **15 Claims**



1. In a focus control system for maintaining the distance between a surface of a record medium and an objective lens substantially constant when relative motion is established between the surface and the objective lens, an apparatus comprising:

means for generating an error signal that varies in accordance with variations from a given value in the distance between said objective lens and said surface;

means for moving said objective lens along an axis of said objective lens which is normal to said surface of said record medium;

means for providing a DC control signal to said moving means, said DC control signal effecting a static positioning of said objective lens;

first means for providing a first dynamic control signal of a first bandwidth to said moving means, said first dynamic control signal effecting a displacement of said objective lens such that said given value in said distance between said objective lens and said surface is maintained substantially constant; and

second means for providing a second dynamic control signal of a second bandwidth to said moving means, said first bandwidth of said first dynamic control signal providing means being greater than said second bandwidth of said second dynamic control signal providing means, said second dynamic control signal effecting a displacement of said objective lens such that displacements of said objective lens which maintain said give value in said distance between said objective lens and said surface as effected by

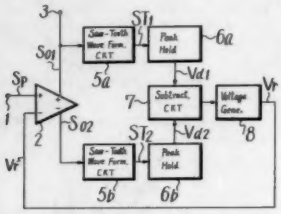
said first dynamic control signal average to approximately zero.

4,418,406

SIGNAL WAVE CONTROL CIRCUIT

Hiroshi Ogawa, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 21, 1981, Ser. No. 304,167
Claims priority, application Japan, Sep. 24, 1980, 55-132522
Int. Cl.³ G11B 5/09
U.S. Cl. 369—124 **12 Claims**



1. A control circuit for a signal wave having predetermined transition intervals, said circuit comprising:

comparator means having first and second input terminals receiving said signal wave and a reference signal, respectively, and generating a comparator output signal having positive and negative portions corresponding to said signal wave;

detector means for detecting one of said predetermined transition intervals included in said comparator output signal and generating a detected signal in response thereto;

holding means for storing said detected signal; and

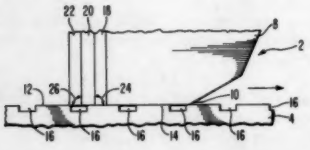
control means for receiving said detected signal from said holding means and supplying said reference signal to said comparator means so that said positive portions of said comparator output signal are equal in length to said negative portions of said output signal.

4,418,407

VIDEO DISC PICKUP STYLUS

Jay J. Brandinger, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 3, 1981, Ser. No. 327,079
Int. Cl.³ G11B 11/06, 3/44
U.S. Cl. 369—126 **8 Claims**



1. A playback stylus adapted for use in capacitively recovering information recorded as a series of geometric variations in the surface of an information disc record which acts as a first conductive plate of a capacitor wherein the stylus comprises:

a body comprising a first dielectric material having a first dielectric constant,

a first layer of a second dielectric material having a dielectric constant less than said first dielectric constant overlaying the body,

a second conductive layer overlaying the first layer which acts as a second conductive plate of a capacitor, and

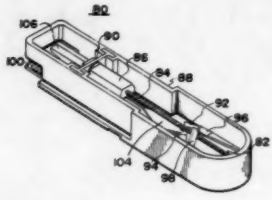
a third layer of a dielectric material having a dielectric constant which is less than said first dielectric constant overlaying the conductive layer.

4,418,408

STYLUS ARM FOR VIDEO DISC PLAYER

Byron K. Taylor, Carmel, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Dec. 7, 1981, Ser. No. 328,303
Int. Cl.³ G11B 3/44
U.S. Cl. 369—170 **2 Claims**



1. A method of forming a stylus arm assembly comprising the steps of:

(A) heating a stylus;

(B) inserting said stylus into a section of heat shrinkable material at one end thereof to form said stylus arm assembly; and

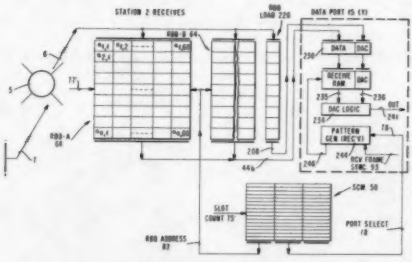
(C) heat shrinking said material to fixedly secure said stylus to said section.

4,418,409

BYTE DATA ACTIVITY COMPRESSION

Larry C. Queen, Silverspring, Md., assignor to IBM Corporation, Armonk, N.Y.

Continuation of Ser. No. 128,058, Mar. 7, 1980. This application Aug. 31, 1981, Ser. No. 297,595
Int. Cl.³ H04B 1/66; H04J 3/18
U.S. Cl. 370—104 **2 Claims**



1. In a TDMA satellite communication system containing a transmitting data port at a first earth station and a receiving data port at a second earth station for transferring channels of digital information of N bytes in length during each time frame, wherein the improvement comprises:

a storage means in the transmitting data port for storing the last byte in the present time frame transmitted to the receiving data port;

a comparison means connected to said storage means in said transmitting data port and connected to the input data source to the transmitting data port, for comparing the last byte transmitted in the present frame to each byte of data in the channel to be transmitted in the next frame;

data transmission switching means connected to said input data source and said comparison means for transmitting

the channel of data in said next frame if said comparison means determines that said last byte in said storage means has not been replicated in every byte in said next channel and said switching means preventing the transmission of said next channel of data if said byte stored in said storage means is replicated by every byte of data in said next channel of said next frame;

a synchronization means connected to said transmitting data port and communicating with said receiving data port for synchronizing the operation of said transmitting port and said receiving data port;

a second storage means in said receiving data port for storing the last byte of data received from said transmitting data port in said present time frame;

replication means connected between said second storage means and the data destination connected to said receiving data port, and communicating with said synchronization means, for generating N replicated bytes and transmitting them to said destination when no data is received from said transmission port in said next frame.

4,418,410

ERROR DETECTION AND CORRECTION APPARATUS FOR A LOGIC ARRAY

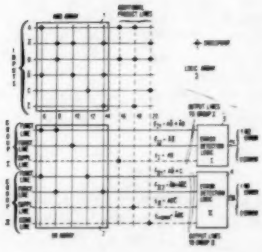
Volkmar Goetze, Grafenau, and Dieter Schuett, Munich, both of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 8, 1980, Ser. No. 214,313

Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2951946

Int. Cl.³ G06F *11/00*

U.S. Cl. 371—15 **14 Claims**



1. Error detection and correction apparatus for testing a binary logic array having at least one AND and one OR logic combination therein and a plurality of output lines, each of which output lines has an available function of said binary logic array present thereon, said apparatus including:

(a) first circuit means, coupled to said binary logic array, for grouping the output function lines thereof so that each of said groups formed thereby include all possible minterms of the binary variables of that group and that all of the groups jointly include the totality of available binary functions of said binary logic array;

(b) second circuit means, appropriately coupled to said first circuit means, for testing each of said groups of output function lines to determine whether one and only one function line in each of said groups has a binary value of one; and

(c) third circuit means, appropriately coupled to said second circuit means, for generating an error signal at its output in response to said test which is indicative of the results thereof.

4,418,411

METHOD AND APPARATUS FOR GENERATING AN EQUIPMENT REPLY SIGNAL FOR THE AUTOMATIC IDENTIFICATION OF OBJECTS AND/OR LIVING BEINGS

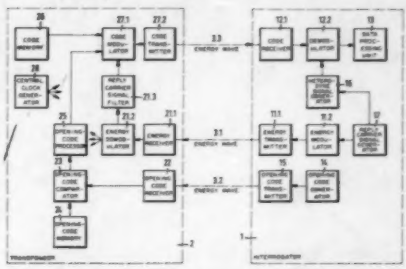
Rainer Strietzel, Heidelberg, Fed. Rep. of Germany, assignor to Brown, Boveri & Cie AG, Mannheim, Fed. Rep. of Germany

Filed Mar. 10, 1981, Ser. No. 242,177

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1980, 3009179

Int. Cl.³ G06F *11/00*; G06K *7/01*; H04Q *9/00*

U.S. Cl. 371—67 **16 Claims**



1. Method for generating an equipment reply signal for the automatic identification of objects and/or living beings, including a stationary interrogator having an energy transmitter, a receiver, an evaluator connectedto the receiver, an opening code generator, and a first modulator connected to the energy transmitter, and a transponder fastened to the object or living being having a circuit unit with an energy receiver and converter, a code memory, a clock generator, a code transmitter, at least one antenna, an opening code receiver, an opening code memory, an opening code comparator connected to the opening code memory and the opening code receiver, a demodulator connected to the energy receiver and converter, and a second modulator connected to the demodulator, code transmitter, opening code comparator and code memory, which comprises radiating opening codes in the interrogator, transmitting the radiated opening codes from the interrogator to the transponder, radiating a code stored in the code memory by the code transmitter if the opening code stored in the opening code memory of the transponder and the radiated opening codes transmitted from the interrogator to the transponder coincide, modulating a reply carrier signal on an energy wave with the first modulator of the interrogator, transmitting the modulated energy wave with the energy transmitter of the interrogator to the energy receiver and converter of the transponder, separating the reply carrier signal from the energy wave with the demodulator of the transponder, modulating the reply carrier signal with the code with the second modulator in the transponder, and transmitting the modulated reply carrier signal as a reply signal with the code transmitter.

4,418,412

DATA REGISTERING SYSTEM WITH KEYED IN AND VOICED DATA COMPARISON

Yutaka Kariya, Futsusa, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jan. 27, 1981, Ser. No. 228,983

Claims priority, application Japan, Feb. 4, 1980, 55-12195

Int. Cl.³ G06F *3/16, 15/02*

U.S. Cl. 371—68 **8 Claims**

1. A data registering system with keyed in and voiced data comparison, comprising:

a keyboard having a plurality of keys for inputting keyed in data;

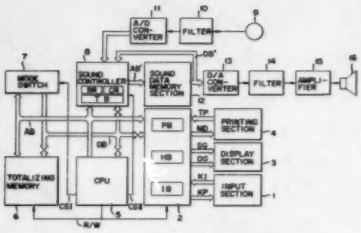
a microphone for inputting voiced language sounds from an operator;

sound input conversion means coupled to said microphone for converting the inputted voice sounds to sound input data;

a sound input data memory coupled to said sound input conversion means for storing the converted sound input data therein;

alarm informing means; and

control means coupled to said keyboard, to said sound input data memory and to said alarm informing means, and including judging means for judging whether or not the



contents of keyed in data inputted by the operation of at least one key on said keyboard coincides with the contents of the sound input data which is stored in said sound input data memory, said control means being responsive to said judging means for executing a process based on the coincidence input signal when the contents of said keyed in data and said sound input data are determined by said judging means to coincide with each other and for inhibiting the execution of said process and driving said alarm informing means when the contents of said keyed in data and said sound input data are determined by said judging means not to coincide with each other.

4,418,413

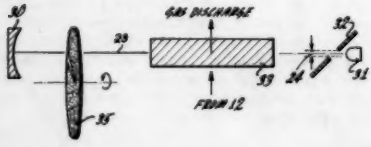
CHEMICAL LASER INHIBITED FOR PULSED OUTPUT

John F. Hon, Tarzana, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation-in-part of Ser. No. 154,733, May 29, 1980, abandoned. This application Sep. 16, 1982, Ser. No. 418,928

Int. Cl.³ H01S *3/095*

U.S. Cl. 372—89 **7 Claims**



1. A chemical laser having a resonant cavity extending along an axis and means for extracting energy from said cavity in periodic pulses, comprising:

an active lasing medium including at least one component having an obtainable metastable state and resulting from at least one chemical reaction between gases, wherein a majority of molecules in said component are charged to said metastable state and capable of continuous wave lasing;

means for introducing said active lasing medium into said resonant cavity in a continuous subsonic flow and in a direction transverse to said axis; and

means for periodically inhibiting continuous wave lasing of said component in said resonant cavity wherein said means for periodically inhibiting continuous wave lasing comprises means for periodically causing said cavity to become non-resonant.

4,418,414

METALLURGICAL PLASMA MELTING FURNACE

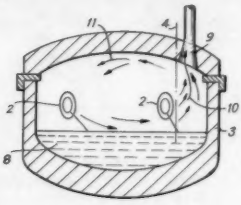
Fred Esser; Detlev Klöpper, both of Leipzig; Walter Lachner, and Albrecht Krüger, both of Dresden, all of German Democratic Rep., assignors to VEB Edelstahlwerk Freital im VEB Rohrkombinat, Freital, German Democratic Rep.

Filed Mar. 3, 1980, Ser. No. 126,569

Claims priority, application German Democratic Rep., Apr. 3, 1979, 211954

Int. Cl.³ H05B *7/00*; H05H *1/00*

U.S. Cl. 373—24 **2 Claims**



1. A metallurgical plasma melting furnace for the melting of metals and alloys, comprising: a substantially cylindrical melting vessel for holding a metal bath having a horizontal surface and a plurality of plasma burners disposed in burner openings in the walls of the vessel for creating flow stable plasma arcs, wherein the vessel includes a first vertical cylindrical domain and second vertical cylindrical domain divided by a vertical longitudinal plane disposed perpendicular to the bath surface and wherein the burners are located in the first cylindrical domain facing the second cylindrical domain and positioned such that the points of intersection of the projections of the burner axes are disposed in the second cylindrical domain and the distance between the intersection points is less than the radius of the vessel.

4,418,415

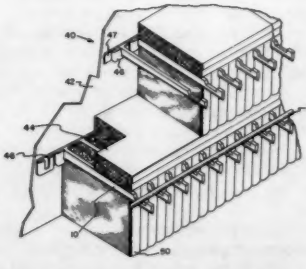
CERAMIC FIBER INSULATED FURNACES WITH ELECTRICAL HANGER ELEMENT OF GREAT MECHANICAL INTEGRITY

Yvan G. Raymond, Niagara Falls, Canada, assignor to Kennecott Corporation, Cleveland, Ohio

Filed Mar. 8, 1982, Ser. No. 355,495

Int. Cl.³ H05B *3/66*

U.S. Cl. 373—130 **24 Claims**



24. Apparatus for suspension of electrical heating elements

in a ceramic fiber insulated furnace including a wall comprising:

(a) a retention element adapted to be fastened to a furnace wall, the retention element including a supportive portion including a notch, the supportive portion being provided with bearing surfaces, the supportive portion including end pieces extending away from one side thereof for mounting the supportive portion in spaced relationship to the furnace wall; and

(b) a ceramic hanger having an inner retainer portion adapted to engage said retention element, a hook portion located at its outer end connected by an elongate body portion of substantially rectangular cross section to the retainer portion which extends substantially at right angles to the body portion; said retainer portion including bearing surfaces positioned substantially perpendicular to the lengthwise direction of the body portion;

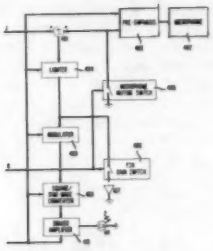
the notch of the supportive portion being dimensioned to allow the body portion of the hanger to extend therethrough and locate the retainer portion of the hanger on one side of the supportive portion with the bearing surfaces of the supportive portion bearing against those of the retainer portion.

4,418,416

FREQUENCY MODULATION TRANSMITTER FOR VOICE OR DATA

Gregory Lese, Howell, and Donald H. Nash, Colts Neck, both of N.J., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.

Filed Apr. 6, 1981, Ser. No. 251,258
Int. Cl.³ H04B 9/00; H04L 27/12
U.S. Cl. 375—5 **12 Claims**



1. In a frequency modulation transmitter for transmitting a first signal or a second data signal, a data preemption circuit characterized by

a data modulator and control circuit (**312, 302, 307**) for generating a modulated data signal (J) and a control signal (K) indicating the presence of data,

a signal muting switch (**405**), responsive to the control signal of the data modulator and control circuit, for muting the first signal, and

a gain switch (**406**), responsive to the control signal of the data modulator and control circuit, for attenuating the level of the modulated data signal.

4,418,417

RECEPTION CONTROL SYSTEM FOR PAPER COUNTING MACHINE

Isamu Uchida, and Moriatsu Kawakami, both of Tokyo, Japan, assignors to Laurel Bank Machine Co., Ltd., Tokyo, Japan

Filed Apr. 6, 1981, Ser. No. 251,562
Claims priority, application Japan, Apr. 8, 1980, 55-47465[U]
Int. Cl.³ G06M 7/06
U.S. Cl. 377—8 **2 Claims**

1. A reception control system for use with a paper counting machine which comprises:

a paper receiving mechanism for receiving and feeding sheets of paper;

an inspecting section disposed downstream of the paper receiving mechanism for receiving sheets of paper therefrom and for inspecting the sheets of paper;

a genuineness discriminating unit in said inspecting section for discriminating the genuiness of the sheets of paper and providing an output signal;

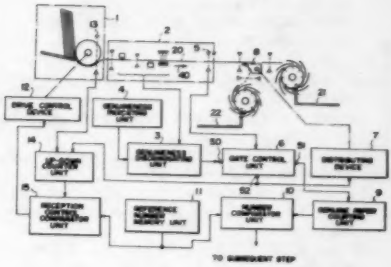
a first storage section disposed downstream of the inspecting section for storing the sheets of genuine paper;

a second storage section disposed downstream of the inspecting section for storing sheets of counterfeit paper;

a distributing device disposed upstream of the first and second storage units for distributing genuine sheets of paper into said first storage section and counterfeit sheets of paper into said second storage section;

a gate control unit connected to the output of the genuineness discriminating unit for selectively controlling the distributing device to cause sheets of genuine paper to enter said first storage section and sheets of counterfeit paper to enter said second storage section in response to the output of the genuineness discriminating unit;

a reference number memory unit for storing the number of sheets of genuine paper to be received and providing an output signal indicative thereof;



a drive control device for controlling the feeding of sheets from the paper receiving mechanism;

a reception sensor disposed immediately downstream of the paper receiving mechanism for detecting and signalling the feeding of sheets of paper thereby;

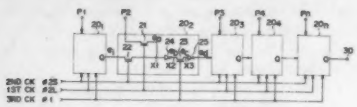
an up-down counter unit responsive to a first input signal from the reception sensor indicative of the number of sheets fed by the paper receiving mechanism for counting up the number of sheets of paper in response to the output of the reception sensor and responsive to a second input signal indicative of a counterfeit sheet of paper for subtracting the number of the sheets of counterfeit paper which is obtained from the output of the genuineness discriminating unit from the number of the sheets of paper counted up thereby to provide an output signal indicative of the number of genuine sheets of paper; and

a reception control comparator unit connected to the up-down counter unit and the reference number memory unit for comparing the output signal of said up-down counter unit and the output signal of said reference number memory unit thereby to compare the corrected number of the sheets of paper and the reference number to control the operation of the drive control device so that the feeding of paper sheets from the paper receiving mechanism is stopped when the desired number of genuine sheets has been collected.

4,418,418
PARALLEL-SERIAL CONVERTER

Kazuhide Aoki, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 24, 1981, Ser. No. 324,557
Claims priority, application Japan, Jan. 13, 1981, 56-2747
Int. Cl.³ G11C *19/28*; H03K *23/22*
U.S. Cl. 377—79 2 Claims



1. A parallel-serial converter which comprises a plurality of cascade connected selection-delay unit circuits, each of which delays a signal selected from a plurality of input signals, and which converts parallel input signals into serial signals, said selection-delay unit circuit comprising:

a first transfer gate which receives a parallel signal and whose control gate is supplied with a first clock signal;

a second transfer gate which receives an output signal from the immediately preceding selection-delay unit circuit, and whose control gate is supplied with a second clock signal;

a first inverter which receives output signals from said first and second transfer gates;

a third transfer gate which receives an output signal from said first inverter and whose control gate is supplied with a third clock signal; and

a second inverter which receives an output signal from said third transfer gate and sends forth an output signal to the second transfer gate of the immediately succeeding selection-delay unit circuit;

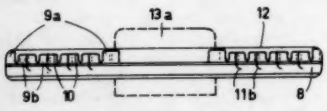
said first clock signal having a phase opposite to that of said third clock signal, and being supplied to the control gate of said first transfer gate only during the load mode in which a parallel signal is supplied to the selection-delay unit circuit; and

said second clock signal having a phase opposite to that of said third clock signal, and being supplied to the control gate of said second transfer gate only during the shift mode in which the previously supplied parallel signal is shifted.

4,418,419
DENTAL TOMOGRAPHY APPARATUS

Peter Schreiber, Rellingen; Eberhard Steenfadt, Stade, both of Fed. Rep. of Germany, and Gerard P. M. Bergman, DJ Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 238,350, Feb. 26, 1981, abandoned.
This application Sep. 10, 1982, Ser. No. 416,792
Claims priority, application Fed. Rep. of Germany, Mar. 1, 1980, 3007935
Int. Cl.³ A61B *6/14*
U.S. Cl. 378—040 10 Claims



1. Apparatus for dental tomography comprising:

an array of electrical contacts which are activated by biting and are adapted for insertion into the mouth of a patient;

an X-ray source;

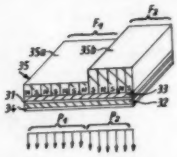
a film holder; and

means for moving the source and film holder around the head of the patient along a path which is determined by a pattern of activated contacts in the array.

4,418,420
METHOD AND ARRANGEMENT FOR GRIPPING X-RAY FILM

Walter Bauer; Heinrich Färber, both of Munich, and Reimund Kluge, Unterhaching, all of Fed. Rep. of Germany, assignors to AGFA-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 7, 1981, Ser. No. 290,930
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030201
Int. Cl.³ G03B *41/16*
U.S. Cl. 378—187 31 Claims



1. An arrangement for gripping photosensitive material, particularly X-ray film, comprising:

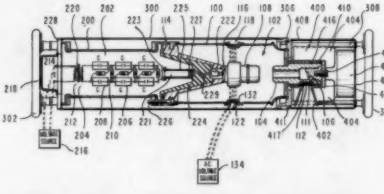
(a) an enclosure for accommodating the photosensitive material; and

(b) a pair of relatively movable units in said enclosure for engaging opposite sides of the photosensitive material, each of said units having a magnetic element for attracting the other unit, and said units including cooperating first portions arranged to engage the photosensitive material with a first magnetic force of first magnitude, said units farther including cooperating second portions arranged to engage the photosensitive material with a second magnetic force of second magnitude larger than said first magnitude.

4,418,421
X-RAY APPARATUS

Kenichiro Kitadate, Higashimurayama, and Yoshinori Tanimoto, Hachiouji, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 9, 1981, Ser. No. 329,057
Claims priority, application Japan, Jul. 20, 1981, 56-112109
Int. Cl.³ H05G *1/06*
U.S. Cl. 378—199 22 Claims



1. An X-ray apparatus arranged as a single portable unit, said apparatus comprising:

an X-ray generator section,

a high voltage generator section,

a cooled section including means for cooling,

each of said sections being enclosed in an individual casing;

bushing means for separating said X-ray generator section from said high voltage generator section in said unit;

a cathode centrally mounted on said bushing means in said X-ray generator section, said cathode including a cathode filament;

an anode having a target positioned in said cooled section, said anode having a portion extending into said X-ray generator section and aligning said target with said filament, said cathode filament and said anode target comprising an X-ray generator;

a high voltage generator mounted in said high voltage generator section;

means for applying power to said high voltage generator;

high voltage contact means mounted on said bushing means;

means for electrically connecting said contact means with said high voltage generator and said filament; and

means for applying an AC voltage to said filament, said applying means including a secondary winding connected to said filament and a primary winding around, and spaced from, said secondary winding, both said windings being located in and coaxial with said X-ray generator section casing.

4,418,422

AIMING DEVICE FOR SETTING NAILS IN BONES

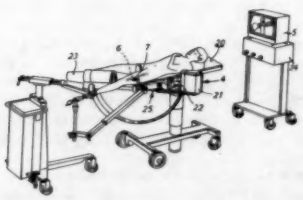
Karl M. Richter, Wentorf; Hans E. Harder, Probsteierhagen, and Klaus Behrens, Rickling, all of Fed. Rep. of Germany, assignors to Howmedica International, Inc., Schonkirchen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 7,308, Jan. 29, 1979, abandoned. This application Mar. 11, 1981, Ser. No. 242,679

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1978, 7805301

Int. Cl.³ G21K *5/08*

U.S. Cl. 378—205 **10 Claims**



1. An aiming device for fasteners of an implanted bone nail, said device being suitable for use with a Roentgen ray source having an exit window emitting a radiation beam, said device comprising:

a reception socket (7) for receiving a fastener aiming sleeve (32);

support means (25) for said reception socket; and

mounting means (3,12) for joining said support means with the housing (21) of the Roentgen ray source (4),

said support means comprising means for positioning said reception socket spaced from the exit window (22) of the Roentgen ray source and approximately in the center of the radiation beam of the source.

4,418,423

DISPARITY DETECTION APPARATUS

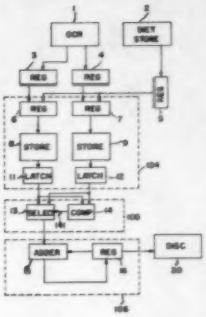
Yoshitake Tsuji; Nobuhiko Mori, and Kazunari Egami, all of Tokyo, Japan, assignors to Nippon Electric Co. Ltd., Tokyo, Japan

Filed Sep. 9, 1981, Ser. No. 300,569

Claims priority, application Japan, Sep. 11, 1980, 55-126244

Int. Cl.³ G06K *9/00*

U.S. Cl. 382—40 **1 Claim**



1. A word recognition apparatus comprising:

a character reader outputting a first train of characters α_1, α_2, . . . α_n regarded as characters of a first kind and a second train of characters β_1, β_2, . . . β_n regarded as characters of second kind in response to one character field,

a first register for storing said first train of characters α_1, α_2 . . . α_n delivered thereto from said character reader in the order of delivery,

a second register for storing said second train of characters $\beta_1, \beta_2, \ldots \beta_n$ delivered thereto from said character reader in the order of delivery,

a first storage device for storing a first kind intercharacter distance $d\{\alpha, U(i)\}$ between the ith character category U(i) of the first kind of characters and a character α outputted from said character reader regarded as the first kind of character,

a second storage device for storing a second kind intercharacter distance $d\{\beta, L(i)\}$ between the ith character category L(i) of the second kind of characters and a character β outputted from said character reader regarded as the second kind of character,

a third storage device for storing a dictionary word to be compared with the output character train of said character reader,

intercharacter distance reading means for reading out of said first storage device as the first kind intercharacter distance the distance $d\{\alpha_k, a_j\}$ which is determined by the jth character a_j of said dictionary word and the content α_k of the kth elements (where $J-s \leq k \leq j+s$ and s is preselected constant 0, 1, 2, . . .) of said first register to be compared with the jth character a_j of said dictionary word and out of said second storage device as the second kind intercharacter distance the distance $d\{\beta_k, a_j\}$ which is determined by said jth character a_j of said dictionary word and the content β_k of the kth element of said second register to be compared therewith,

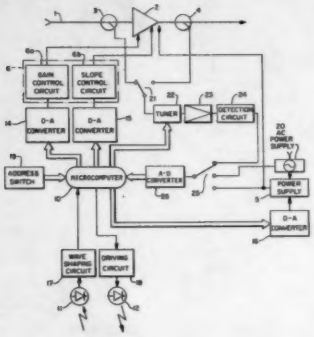
intercharacter distance comparing means for comparing the read-out intercharacter distances $d\{\alpha_k, a_j\}$ and $d\{\beta_k, a_j\}$ to select a smaller one as a representative intercharacter distance between the character a_j of the dictionary word and the kth output characters α_k and β_k, and

means for calculating the disparity between the dictionary word and the character output trains by use of the representative character distances selected by said comparing means.

4,418,424
CABLE TELEVISION TRANSMISSION CONTROL SYSTEM

Noriyuki Kawamoto, Shijonawate; Toru Higashi, Moriguchi, and Harumasa Kajita, Fujisawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 16, 1981, Ser. No. 244,327
Claims priority, application Japan, Mar. 17, 1980, 55-34414
Int. Cl.³ H04B *17/00*
U.S. Cl. 455—4 **11 Claims**



1. A cable transmission control system comprising:

a line amplifier installed between coaxial cables for amplifying signals transmitted through said coaxial cables;

a remote control box which is wirelessly coupled to said line amplifier for receiving data with respect to the operating conditions of said line amplifier and for checking said line amplifier based on said operating conditions and for transmitting control instructions to adjust said line amplifier;

a receiver for receiving said control instructions from said control box;

a microcomputer which is connected to said receiver for deciphering said control instructions transmitted by said control box and received by said receiver, and for collecting data with respect to operating conditions from the input and output of said line amplifier, and for generating control data for controlling said line amplifier;

a control means which is connected to said line amplifier and said microcomputer for controlling said line amplifier according to said control data; and

a transmitter which is connected to said microcomputer for transmitting said collected data from said microcomputer to said remote control box by propagation through space.

4,418,425
ENCRYPTION USING DESTINATION ADDRESSES IN A TDMA SATELLITE COMMUNICATIONS NETWORK

John W. Fennel, Jr., Olney, and Miles T. Heinz, Jr., Seabrook, both of Md., assignors to IBM Corporation, Armonk, N.Y.

Filed Aug. 31, 1981, Ser. No. 297,607
Int. Cl.³ H04K *1/00*; **H04J** *3/16*
U.S. Cl. 455—27 **6 Claims**

1. In a TDMA satellite communications network having a master station and a plurality of subsidiary earth stations, each communicating through a satellite transponder in a plurality of TDMA frames grouped into superframes, each said station including a TDMA communications controller having a plurality of input/output ports for transferring channels of data from respective, local data users to a TDMA output to said satellite transponder and transferring said channels of data via a TDMA input from said satellite transponder to said respective local users on a time interleaved basis during periodic TDMA frames, an encryption/decryption system for said network, comprising:

a superframe initialization vector generator in said master station, having an output connected to said TDMA output thereof, for transmitting a superframe synchronization vector once during each superframe;

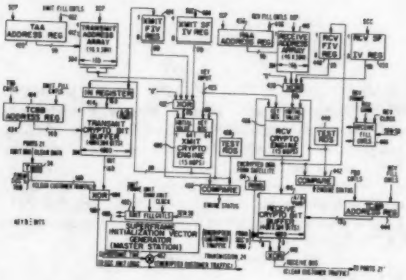
a first encryption engine in each of said stations, having an input connected to said TDMA input thereof, for receiving said superframe synchronization vector and encrypting it with a key, forming a first frame initialization vector prior to a first transmit frame of a transmit superframe, to be used for said first transmit frame;

a frame initialization vector buffer in each of said stations, having an input connected to said first encryption engine, for storing frame initialization vectors output therefrom;

a transmit address array buffer in each of said stations, for storing a plurality of destination addresses, each respectively corresponding to each of said plurality of channels of data to be transmitted;

a first exclusive-OR circuit in each of said stations, having a first input connected to said frame initialization vector buffer and a second input connected to said transmit address array buffer, and an output connected to said input of said first encryption engine, for generating a plurality of channel units of exclusive-OR bits from said first initialization vector and said plurality of destination addresses, each said channel unit corresponding to each of said channels of data to be transmitted;

said first encryption engine receiving each of said plurality of channel units of exclusive-OR bits and encrypting it with a key, forming a corresponding plurality of channel units of encryption bits;



a transmit crypto bit buffer in each of said stations, having an alternate A/B storage cycle, with an input connected to said output of said first encryption engine, and an output, for storing said plurality of channel units of encryption bits on a first side during the transmit frame immediately preceding said first transmit frame;

a second exclusive-OR circuit in each of said stations, having a first input connected to the output of said transmit crypto bit buffer and an output connected to said TDMA output;

a transmit burst buffer in each of said stations having an alternate A/B storage cycle, with a data input connected to a transmit bus common to the data outputs of all of said ports and an output connected to a second input of said second exclusive-OR circuit, for storing, in clear-text form, said plurality of channels of data on a first side during said transmit frame immediately preceding said first transmit frame;

said transmit burst buffer bursting said plurality of clear-text data channels from said first side thereof during said first transmit frame, to said second input of said second exclusive-OR circuit synchronously with said transmit crypto bit buffer bursting said plurality of channel units of encryption bits from said first side thereof to said first input of said second exclusive-OR circuit;

said second exclusive-OR circuit outputting to said TDMA output a resultant plurality of encrypted data channels,

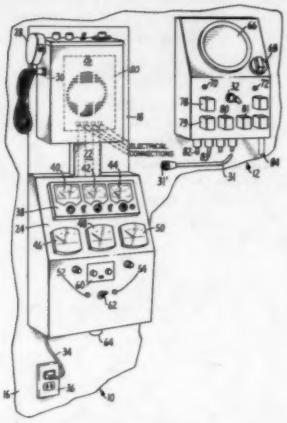
each of which is transmitted to said satellite transponder with a corresponding destination address.

4,418,426

EMERGENCY CITIZENS' BAND RADIO SYSTEM

Alger E. Singletary, 1948 Esperanza Dr., Concord, Calif. 94520

Filed Dec. 11, 1980, Ser. No. 215,448
Int. Cl.³ H04B *17/00, 1/38*
U.S. Cl. 455—67 **4 Claims**



1. An emergency Citizens' Band radio system including a base station adapter, said base station adapter comprising:

an antenna electrical connection and a power supply electrical connection adapted to be respectively connected to an antenna lead connection and a power supply connection of a mobile Citizens' Band transceiver; rectifier means for rectifying line voltage and providing direct current power to said transceiver via said power supply electrical connection; battery means; battery charger means for charging said battery means; automatic switching means for connecting said battery means to said power supply electrical connection when said line voltage fails; system performance optimizing means connected to said antenna electrical connection for monitoring the operating condition of the transceiver; and at least one remote operating unit for remotely operating said transceiver, said remote operating unit comprising a pair of operating condition indicating lights, and means in said base station adapter for extinguishing said operating condition indicating lights when said line voltage fails.

4,418,427

TUNING SYSTEM FOR A MULTI-BAND TELEVISION RECEIVER

Max W. Muterspaugh, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1982, Ser. No. 363,567
Int. Cl.³ H04B *1/16*
U.S. Cl. 455—180 **7 Claims**

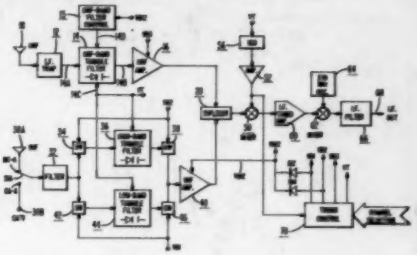
1. A tuning system for a television receiver comprising:

first and second signal paths for receiving radio frequency signals disposed in respective first and second frequency bands, each of said signal paths including filter means for providing frequency selective characteristics controllable in response to a tuning signal, said filter means of said first signal path including first and second resonant circuits responsive to said tuning signal;

tuning control means for developing said tuning signal to select one of said radio frequency signals within said first and second frequency bands and for developing a band signal indicative of the one of said first and second frequency bands which includes said selected radio frequency signal;

combining means for combining signals from said first and second signal paths onto a common signal path;

means for applying said tuning signal to said filter means of said first and second signals paths; and



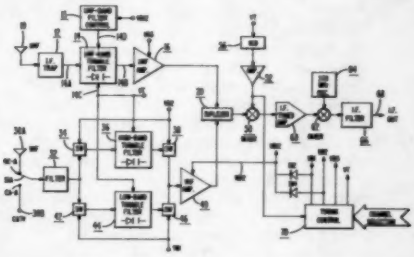
means coupled to said first signal path and responsive to said band signal for modifying said tuning signal applied to said first and second resonant circuits by different amounts when said selected radio frequency signal is included in said second frequency band.

4,418,428

TUNING SYSTEM FOR A MULTI-BAND TELEVISION RECEIVER

Robert M. Evans, Hightstown, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 30, 1982, Ser. No. 363,570
Int. Cl.³ H04B *1/26*
U.S. Cl. 455—180 **10 Claims**



1. A tuning system for a television receiver comprising:

first and second signal paths for receiving radio frequency signals disposed in respective first and second frequency bands, each of said signal paths including filter means for providing frequency selective characteristics controllable in response to a tuning control signal;

tuning control means for developing said tuning control signal having a magnitude to select one of said radio frequency signals within said first and second frequency bands and for developing a band signal indicative of the one of said first and second frequency bands which includes said selected radio frequency signal;

combining means for combining signals from said first and second signal paths onto a common signal path;

means for applying said tuning control signal to said filter means of said first and second signal paths; and

means coupled to said first signal path and responsive to said band signal for modifying the magnitude of said tuning

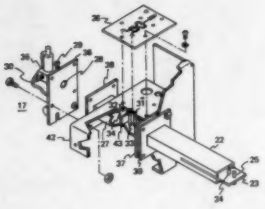
control signal applied to said filter means of said first signal path relative to that applied to said filter means of said second signal path when said selected radio frequency signal is included in said second frequency band.

4,418,429

MIXER FOR USE IN A MICROWAVE SYSTEM

Clayton R. Roberts, Syracuse, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed May 7, 1982, Ser. No. 375,816
Int. Cl.³ H04B 1/26
U.S. Cl. 455—327 **15 Claims**



1. A mixer comprising:

A. waveguide means for propagating waves in a TE 10 mode, comprising:

(1) two electrically isolated waveguide sections, each having an electrically shorted transverse end wall;

(2) a first mating end associated with the first waveguide section; and

(3) a second mating end associated with the second waveguide section;

B. a local oscillator for coupling high frequency energy into said first waveguide section via said first mating end;

C. means for coupling a signal into said second waveguide section via said second mating end to be heterodyned with local oscillator energy;

D. a microstrip circuit comprising a ground plane, a dielectric layer, and surface conductors formed on said dielectric layer, said microstrip circuit further comprising:

(1) a four-port hybrid coupler formed of surface conductors having two serial branches and two shunt branches,

(2) a balanced detector comprising a pair of diodes, each having one electrode connected via a surface conductor to one hybrid coupler output port, the other diode electrodes being joined and connected to a surface conductor at which the detector output, containing heterodyned signals appear, and

(3) a low pass filter formed of surface conductors, and connected to the detector output for selecting the desired low frequency heterodyne and rejecting undesired higher frequency heterodynes;

said microstrip circuit being disposed adjacent the wide face of said second waveguide section in proximity to the transverse end wall thereof;

E. a first resonant stub of approximately ¼ electrical wavelength projecting through an aperture in the wide face of said first waveguide section into the interior thereof for coupling local oscillator energy from said first waveguide section to one input port of said hybrid coupler, the stub forming an effective impedance transformer for matching the impedance of said first waveguide section to the impedance of said one hybrid coupler input port;

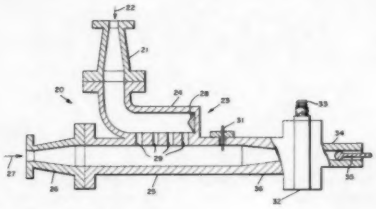
F. a second resonant stub of approximately ¼ electrical wavelength projecting through an aperture in said wide face of said second waveguide section into the interior thereof for coupling signal energy from said second waveguide section to said other input port of said hybrid coupler, the stub forming an effective impedance transformer for matching the impedance of said second waveguide section to the impedance of the other said hybrid coupler input port.

4,418,430

MILLIMETER-WAVELENGTH OVERMODE BALANCED MIXER

Garry N. Hulderman, Riverside, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Oct. 5, 1981, Ser. No. 308,325
Int. Cl.³ H04B 1/26
U.S. Cl. 455—328 **16 Claims**



1. An overmode mixer comprising:

first waveguide means for converting a first applied signal at a first predetermined fundamental frequency having a first predetermined energy mode to a first output signal having a predetermined energy overmode;

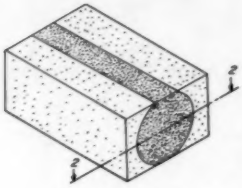
second waveguide means for converting a second applied signal at a second predetermined fundamental frequency having a second predetermined energy mode to a second output signal having said predetermined energy overmode;

the first and second fundamental frequencies differing in nominal value by a selected intermediate frequency, the energy modes of the first and second applied signals being of like fundamental mode, the energy overmodes of the first and second output signals being of like overmode;

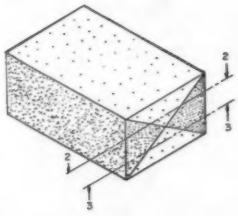
third means coupled to said first and second means for combining the energy of said first and second output signals at said predetermined energy overmode to produce intermediate frequency signals within said third means corresponding to said selected intermediate frequency; and

fourth means coupled to said third means for coupling said intermediate frequency signals out of said third means to provide an intermediate frequency output signal of said mixer.

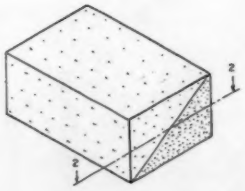
271,534
TWO COLOR CHEWING GUM
Robert J. Huzinec, Brooklyn, N.Y., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Dec. 12, 1980, Ser. No. 215,962
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—12



271,535
TWO COLOR CHEWING GUM
Robert J. Huzinec, Brooklyn, N.Y., assignor to Warner-Lambert Co., Morris Plains, N.J.
Filed Dec. 12, 1980, Ser. No. 215,963
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—12

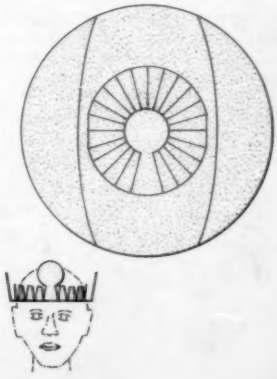


271,536
TWO COLOR CHEWING GUM
Albert E. Siecke, Westfield, N.J., assignor to Warner-Lambert Co., Morris Plains, N.J.
Filed Dec. 12, 1980, Ser. No. 215,984
Term of patent 14 years
Int. Cl. D01—*01*
U.S. Cl. D1—12

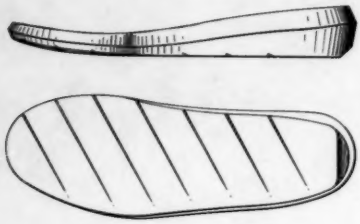


271,537
JEANS OR THE LIKE
W. Homer Alsup, P.O. Box 6703, San Francisco, Calif. 94101
Filed Oct. 26, 1981, Ser. No. 315,188
Term of patent 14 years
Int. Cl. D2—*02*
U.S. Cl. D2—28

271,538
WESTERN HAT
Rudy De Lozada, 84 Skyline Dr., Daly City, Calif. 94118
Filed Mar. 13, 1981, Ser. No. 243,300
Term of patent 14 years
Int. Cl. D02—*03*
U.S. Cl. D2—253

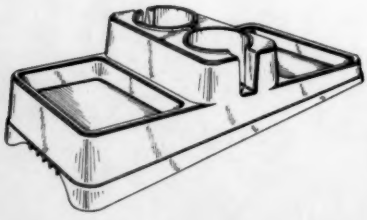


271,539
SHOE SOLE
Charles Bergmans, Sprang Capelle, Netherlands, assignor to Clarks of England, Inc., Norwalk, Conn.
Filed Aug. 23, 1982, Ser. No. 410,320
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—320



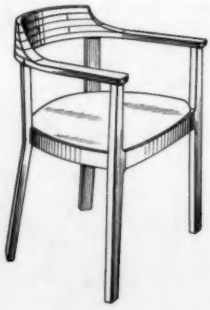
271,540
BINOCULAR CASE
Brandt G. Williams, 12090 Mound View Pl., Studio City, Calif. 91604
Filed Nov. 9, 1981, Ser. No. 319,226
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D3—33

271,541
AUTOMOBILE SNACK TRAY
Gary L. Rockwell, 205 Willowcrest Way, LaGrange, Ga. 30240
Filed Feb. 12, 1982, Ser. No. 348,262
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D3—40



271,542
COMBINED SNACK TRAY AND LITTER BASKET FOR AN AUTOMOBILE
Gary L. Rockwell, 205 Willowcrest Way, LaGrange, Ga. 30240
Filed Feb. 12, 1982, Ser. No. 348,263
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D3—40

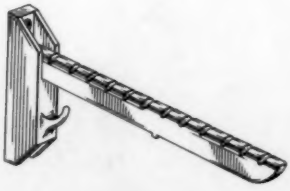
271,543
CHAIR
Robert DeFuccio, Spinnerstown, Pa., assignor to Simmons Universal Corporation, New York, N.Y.
Filed Jul. 6, 1981, Ser. No. 280,734
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—73



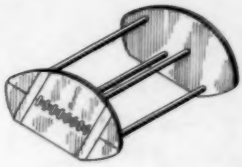
271,544
DISPENSER FOR FLUID OR SEMI-FLUID MATERIALS
Gary B. Kleman, St. Louis, Mo., assignor to Calgon Corporation, Pittsburgh, Pa.
Filed Jun. 18, 1981, Ser. No. 274,955
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D6—95

271,545
HANGER RACK FOR GARMENTS OR THE LIKE
Vito Licari, and Yaffa Licari, both of 875 Ocean Ave., Elberon, N.J. 07740
Filed Apr. 22, 1981, Ser. No. 256,485
Term of patent 14 years
Int. Cl. D6—*06;* D8—*08*
U.S. Cl. D6—122

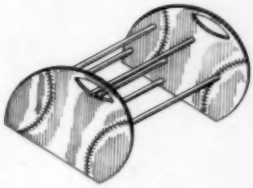
271,546
COLLAPSIBLE RACK FOR CLOTHES HANGERS, BOLA TIES OR JEWELRY ITEMS
John N. Smith, Tempe, Ariz., assignor to Warren F. B. Lindsley, Phoenix, Ariz., a part interest
Filed Aug. 24, 1981, Ser. No. 295,868
Term of patent 14 years
Int. Cl. D6—*04;* D8—*08*
U.S. Cl. D6—124



271,547
SHOE RACK
Robert L. Bowsher, 212 - 19th Ave., Moline, Ill. 61265
Filed Jul. 27, 1981, Ser. No. 289,831
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—153

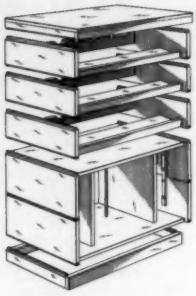


271,548
SHOE RACK
Robert L. Bowsher, 212 - 19th Ave., Moline, Ill. 61265
Filed Jul. 27, 1981, Ser. No. 289,832
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—153



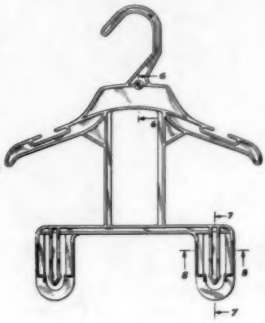
271,549
SHOE RACK
Robert L. Bowsher, 212 - 19th Ave., Moline, Ill. 61265
Filed Jul. 27, 1981, Ser. No. 289,833
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—153

271,550
MODULAR WINE RACK
Samuel McMillan, 2 Valley View Dr., Bloomfield, Conn. 06002
Filed Apr. 28, 1981, Ser. No. 258,430
Term of patent 14 years
Int. Cl. D06—*04*
U.S. Cl. D6—188



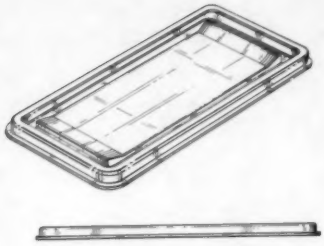
271,551
FRAME FOR A TABLE
Karl Rausch, Im Rosengartle 15, 7500 Karlsruhe-Durlach, Fed. Rep. of Germany
Filed Jul. 11, 1980, Ser. No. 167,530
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1980, MR VIII/133
Term of patent 14 years
Int. Cl. D6—*06*
U.S. Cl. D6—191

271,552
GARMENT HANGER
Howard Samuels, Fort Lee, N.J., assignor to A&E Products Group, Inc., Keasbey, N.J.
Filed Oct. 30, 1981, Ser. No. 316,712
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—252

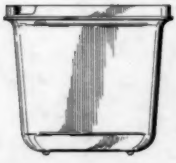


271,553
SKIRT HANGER
Seroun Kesh, 3620 Orchard Lake Rd., West Bloomfield, Mich. 48033
Filed May 20, 1981, Ser. No. 265,528
Term of patent 14 years
Int. Cl. D6—*08*
U.S. Cl. D6—254

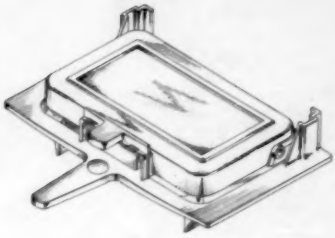
271,554
CONTAINER CLOSURE OR THE LIKE
Gerald M. Grusin, Chicago, Ill., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 20, 1981, Ser. No. 294,718
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—40

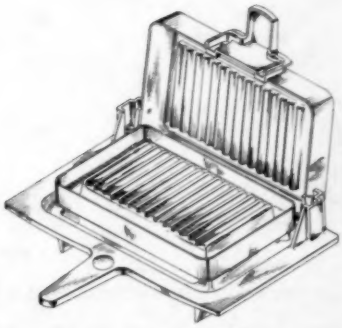


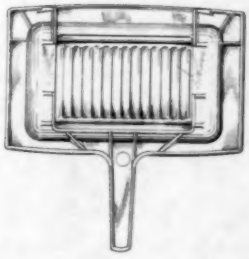
271,555
ICE CONTAINER
Daenen, Robert H. C. M., Hekelgem, Belgium, and Erik Herlow, Tikob, Denmark, assignors to Dart Industries Inc., Northbrook, Ill.
Filed Sep. 17, 1981, Ser. No. 280,685
Term of patent 14 years
Int. Cl. D07—*01*
U.S. Cl. D7—78



271,556
MICROWAVE COOKING UTENSIL
Robert F. Bowen, Burlington, Mass.; Walter B. Herbst, Evanston, Ill., and Thomas J. Martel, North Reading, Mass., assignors to Raytheon Company, Lexington, Mass.
Filed Jun. 3, 1981, Ser. No. 270,177
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—352

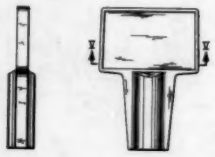






271,557
GRIDDLE
Joseph W. Schwarzli, 430 Comstock Rd., Scarborough, Ontario, Canada
Filed Jan. 19, 1981, Ser. No. 226,053
Claims priority, application Canada, Nov. 12, 1980, 12-11-80-6
Term of patent 14 years
Int. Cl. D07—*02*
U.S. Cl. D7—363

271,558
ACTUATOR HANDLE FOR A BEVERAGE DISPENSING VALVE
Terrance C. Beiland, Maple Grove, and William B. Mackrell, New Brighton, both of Minn., assignors to The Cornelius Company, Anoka, Minn.
Filed Feb. 5, 1982, Ser. No. 345,979
Term of patent 14 years
Int. Cl. D15—*08*
U.S. Cl. D7—398

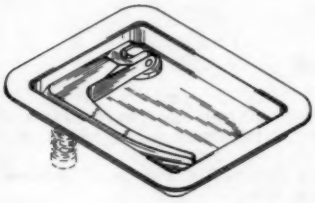


271,559
WEDGE
Richard D. Reimann, 18901 S. Lyons Rd., and Roger J. Usinger, 11331 S. Forest Ridge La., both of Oregon City, Oreg. 97045
Filed Apr. 10, 1981, Ser. No. 252,907
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—47

271,560
LEVER HANDLE FOR DOORS OR WINDOWS
Pasquale Valli, Renate, Italy, assignor to Valli & Colombo S.P.A., Italy
Filed Jun. 3, 1981, Ser. No. 269,949
Claims priority, application Italy, Dec. 23, 1980, 23752 B/80[U]
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—308

271,561
LEVER HANDLE FOR DOORS OR WINDOWS
Pasquale Valli, Renate, Italy, assignor to Valli & Colombo S.P.A., Italy
Filed Jun. 3, 1981, Ser. No. 269,950
Claims priority, application Italy, Dec. 23, 1980, 23750 B/80[U]
Term of patent 14 years
Int. Cl. D8—*06*
U.S. Cl. D8—308

271,562
NESTABLE LATCH OPERATING HANDLE AND HOUSING UNIT
Lee S. Weinerman, Medina, Ohio, assignor to The Eastern Company, Cleveland, Ohio
Filed Mar. 18, 1981, Ser. No. 245,152
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—338

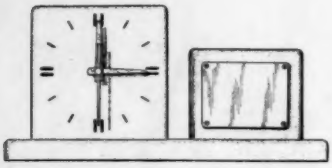


271,563
ROTARY DIAL FOR COMBINATION LOCKS AND THE LIKE
Charles S. Gehrie, West Orange, N.J., assignor to Presto Lock, Inc., Garfield, N.J.
Filed May 19, 1981, Ser. No. 265,218
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—343

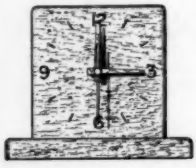
271,564
BOTTLE
Howard Cooper, 67 W. Chestnut St., Chicago, Ill. 60610
Filed Oct. 15, 1981, Ser. No. 312,279
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—325

271,565
BOTTLE
Glenn L. Slater, Ingleside, Ill., assignor to Baxter Travenol Laboratories, Inc., Deerfield, Ill.
Filed Jul. 17, 1981, Ser. No. 284,043
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—370

271,566
COMBINED CLOCK AND INSCRIPTION PLATE PEDESTAL
Clyde W. Powell, Roan Mountain, Tenn., assignor to Alpine Enterprises, Inc., Roan Mountain, Tenn.
Division of Ser. No. 26,219, Apr. 2, 1979, Pat. No. Des. 266,992.
This application Sep. 14, 1981, Ser. No. 302,177
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—2

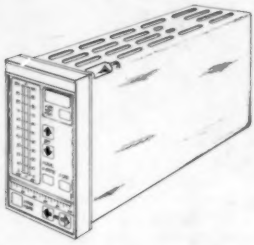


271,567
CLOCK
Clyde W. Powell, Roan Mountain, Tenn., assignor to Alpine Enterprises, Inc., Roan Mountain, Tenn.
Division of Ser. No. 26,219, Apr. 2, 1979, Pat. No. Des. 266,992.
This application Sep. 14, 1981, Ser. No. 302,176
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D10—26

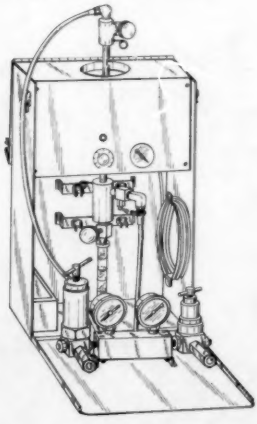


271,568
ULTRASONIC WAVE THICKNESS METER
Toyohiko Kitada, Sagamihara; Minoru Tamura, Chigasaki, and Takanori Arioka, Tokyo, all of Japan, assignors to Tokyo Keiki Company Limited, Tokyo, Japan
Filed Mar. 27, 1981, Ser. No. 248,545
Claims priority, application Japan, Oct. 31, 1980, 55-45358
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—46

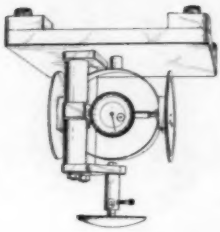
271,569
CONTROL UNIT HOUSING FOR A CONTROL PANEL MOUNTED CONTROL STATION
Peter K. Lui, Mentor; Thomas Scheib, Chesterland, and George S. Whaley, Eastlake, all of Ohio, assignors to The Babcock & Wilcox Company, New Orleans, La.
Filed Apr. 21, 1981, Ser. No. 256,261
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—49



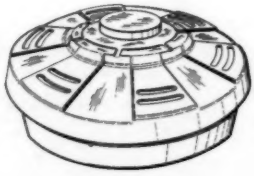
271,570
HIGH TEMPERATURE, HIGH PRESSURE FILTER PRESS FOR TESTING DRILLING FLUIDS OR SIMILAR APPARATUS
David E. Cain, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.
Filed Aug. 6, 1981, Ser. No. 263,442
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—83



271,571
CONTACT PRESSURE MEASURING A DEVICE
Bo G. Lonnstedt, Kvarnbergsvagen 23, S-141 45 Huddinge, Sweden
Filed Jun. 9, 1981, Ser. No. 271,958
Claims priority, application Sweden, Dec. 10, 1980, 80-2499
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—83



271,572
SIGNALLING DEVICE FOR DETECTING WAVES IN A BODY OF WATER
R. Douglas Creelman, Weston, Canada, assignor to Georgian Manufacturing Ltd., Don Mills, Canada
Filed May 26, 1981, Ser. No. 266,897
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106



271,573
ULTRA SONIC ALARM DETECTOR
Seihei Wada, Yachiyo, and Kiyozumi Chino, Musahino, both of Japan, assignors to Uro Denshi Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Sep. 16, 1981, Ser. No. 302,813
Term of patent 14 years
Int. Cl. D10—*05*
U.S. Cl. D10—106

271,574
NECKLACE
Gianni Bulgari, 11 Via dei Condotti, Rome, Italy 00187
Continuation-in-part of Ser. No. 345,112, Feb. 2, 1982. This application Sep. 20, 1982, Ser. No. 420,469
Claims priority, application Italy, Aug. 7, 1981, 35963 B/81[U]
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—13

271,575
LINK
Clyde K. Nichols, LaMoutonniere Mourex, 01220 Divonne Les Bains, France
Filed Feb. 22, 1982, Ser. No. 350,647
Term of patent 14 years
Int. Cl. D11—*01*
U.S. Cl. D11—93

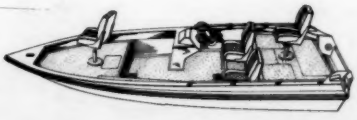
271,576
ORNAMENT
George C. Sun, 530 Rhode Island Ave., Cherry Hill, N.J. 08002
Filed Nov. 24, 1981, Ser. No. 324,561
Term of patent 14 years
Int. Cl. D11—*05*
U.S. Cl. D11—128

271,577
FIGURINE
Susan J. Culkin, 169 N. Kellogg, Apt. C, Santa Barbara, Calif. 93111
Filed May 14, 1981, Ser. No. 263,416
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—161

271,578
FIGURINE
Susan J. Culkin, 169 N. Kellog, Apt. C, Santa Barbara, Calif. 93111
Filed Sep. 4, 1981, Ser. No. 299,398
Term of patent 14 years
Int. Cl. D11—*02*
U.S. Cl. D11—161

271,579
DESIGN FOR A BOAT
Forrest L. Wood; Mickey C. Wood, both of Flippin; Dale H. Jensen, Everton; Kenneth P. Poley, Yellville; Charles C. Hoover, Bull Shoals, and Gary L. Wilson, Flippin, all of Ark., assignors to Wood Manufacturing Company, Incorporated, Flippin, Ark.
Filed Jun. 5, 1981, Ser. No. 270,794
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—300

271,580
BOAT
Forrest L. Wood; Mickey C. Wood, both of Flippin; Dale H. Jensen, Everton; Kenneth P. Poley, Yellville; Charles C. Hoover, Bull Shoals, and Gary L. Wilson, Flippin, all of Ark., assignors to Wood Manufacturing Company, Incorporated, Flippin, Ark.
Filed Jun. 5, 1981, Ser. No. 270,796
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—300

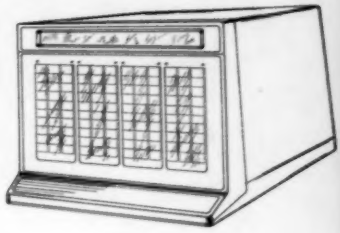


271,581
BOAT
Forrest L. Wood; Mickey C. Wood, both of Flippin; Dale H. Jensen, Everton; Kenneth P. Poley, Yellville; Charles C. Hoover, Bull Shoals, and Gary L. Wilson, Flippin, all of Ark., assignors to Wood Manufacturing Company, Incorporated, Flippin, Ark.
Filed Jun. 10, 1981, Ser. No. 270,859
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—300

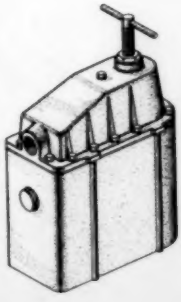
271,582
CATAMARAN ANTI-PITCH HYDROFOIL
Lloyd C. Knowles, 43 Front St., Hopkinton, Mass. 01748
Filed Sep. 3, 1981, Ser. No. 298,944
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—317

271,583
PROPELLER SHAFT LOCK HOUSING
Richard D. Badzinski, Oak Creek, and George G. Nigel, St. Francis, both of Wis., assignors to Shaft Lok, Inc., New Berlin, Wis.
Filed Sep. 4, 1981, Ser. No. 299,396
Term of patent 14 years
Int. Cl. D12—*16*
U.S. Cl. D12—317

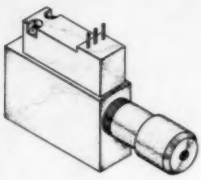
271,584
CONTROL STATION
David M. Arrigoni, 19900 Old Santa Cruz Hwy., Los Gatos, Calif. 94030
Filed Feb. 12, 1981, Ser. No. 233,800
Term of patent 14 years
Int. Cl.[3] D13—*03;* D14—*02*
U.S. Cl. D13—12



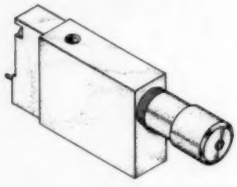
271,585
AIR DOME FOR PUMPING AND DEWATERING SYSTEMS
Wendell L. Bradford, Corona, Calif., assignor to Stang Hydronics Inc., Orange, Calif.
Filed Jul. 20, 1981, Ser. No. 284,617
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



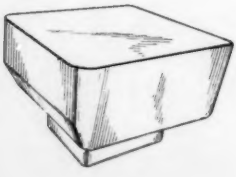
271,586
COMBINED VACUUM PUMP AND CONTROL VALVE THEREFOR
Yoji Ise, Tokyo, Japan, assignor to Myotoku Ltd., Japan
Filed Oct. 19, 1981, Ser. No. 312,551
Claims priority, application Japan, Apr. 30, 1981, 56-18295
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7



271,587
COMBINED VACUUM PUMP AND CONTROL VALVE THEREFOR
Yoji Ise, Tokyo, Japan, assignor to Myotoku Ltd., Japan
Filed Oct. 19, 1981, Ser. No. 312,568
Claims priority, application Japan, Apr. 30, 1981, 56-18296
Term of patent 14 years
Int. Cl. D15—*02*
U.S. Cl. D15—7

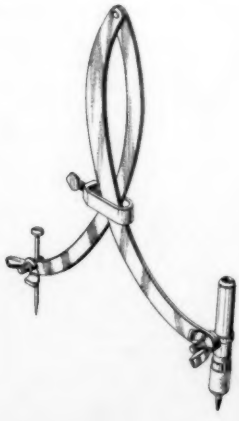


271,588
METAL BAR
Christian S. Bakken, Ski, and Jan B. Ronhaug, Porsgrunn, both of Norway, assignors to Norsk Hydro a.s., Oslo, Norway
Filed Apr. 28, 1981, Ser. No. 258,271
Term of patent 14 years
Int. Cl. D31—*00*
U.S. Cl. D15—144



271,589
TYPEWRITER
Takashi Hirata, Yokohama; Junichi Motoyoshi, Funabashi; Yoshihiro Kobata, and Masahiro Rachi, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan
Filed Jun. 18, 1981, Ser. No. 275,401
Claims priority, application Japan, Dec. 22, 1980, 55-53820
Term of patent 14 years
Int. Cl. D18—*01*
U.S. Cl. D18—1

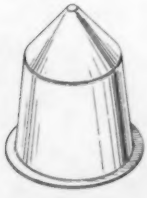
271,590
COMPASS
James E. Ashcroft, 1307 Westmoreland, Colorado Springs, Colo. 80907
Filed Apr. 16, 1981, Ser. No. 254,952
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D19—38



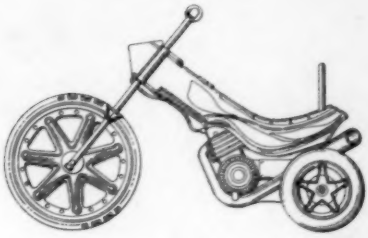
271,591
TOY TRACK WAY
Ottilia Z. Taylor, San Carlos, and Janos J. Lazar, Redwood City, both of Calif., assignors to Injection Mold Partners, Ltd., San Rafael, Calif.
Filed Oct. 17, 1980, Ser. No. 182,414
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

271,592
TOY TRACKWAY
Ottilia Z. Taylor, San Carlos, and Janos J. Lazar, Redwood City, both of Calif., assignors to Injection Mold Partners, Ltd., San Rafael, Calif.
Filed Oct. 17, 1980, Ser. No. 182,415
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—59

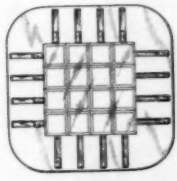
271,593
SAND MOLD
Lorraine D. Stone, and Susan C. Clark, both of Newport Beach, Calif., assignors to Sand Designs, Inc., Costa Mesa, Calif.
Filed Mar. 24, 1981, Ser. No. 246,997
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D21—59

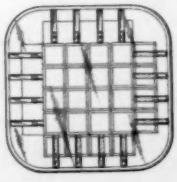


271,594
TOY RIDING CYCLE FOR CHILDREN
Frank Mercurio, Wallingford, and Richard H. Ratkiewich, Prospect, both of Conn., assignors to Coleco Industries, Inc., Hartford, Conn.
Filed Jun. 8, 1981, Ser. No. 271,432
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—80

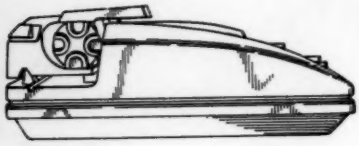


271,595
PUZZLE TOY
Gunpei Yokoi, Kyoto, Japan, assignor to Nintendo Co., Ltd., Japan
Filed Nov. 23, 1981, Ser. No. 323,968
Claims priority, application Japan, Jun. 4, 1981, 56/24515
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—104





271,596
COMBINED TOY TYPEWRITER AND LOUDSPEAKER THEREFOR
Alan Collison, Rainworth, England, assignor to Dobson Park Industries, Limited, England
Filed May 21, 1981, Ser. No. 265,971
Claims priority, application United Kingdom, Dec. 8, 1980, 80/997942
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—127



271,597
DOLL
Elizabeth M. Beanland, 19919- 48th Ave., Langley, British Columbia, Canada
Filed Oct. 19, 1981, Ser. No. 312,422
Claims priority, application Canada, May 1, 1981, 01-05-81-4
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166

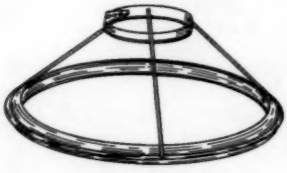
271,598
DOLL
Charles H. Helein, 11752 Dry River Ct., Reston, Va.
Filed Jan. 27, 1982, Ser. No. 343,104
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—166

271,599
CHILD'S DOLL
Lorrie E. Foster, 25357 Via Oriol, Valencia, Calif. 91355
Filed Nov. 24, 1981, Ser. No. 324,592
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—171

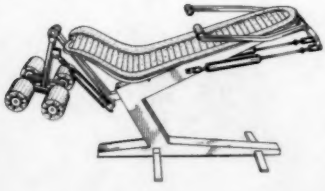
271,600
DOLL
Masahiko Yamada, 1-15-30, Tomiokita, Nara, Japan
Filed Sep. 28, 1981, Ser. No. 306,247
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—177

271,601
STUFFED FIGUREHEAD DOLL
Lynda H. Newman, 666 W. 18th St., No. 3, Costa Mesa, Calif. 92627
Filed Oct. 19, 1981, Ser. No. 312,420
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—190

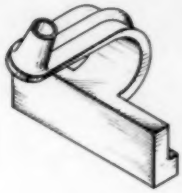
271,602
HOOP EXERCISER
Ottilia Z. Taylor, San Carlos, and Janos J. Lazar, Redwood City, both of Calif., assignors to Injection Mold Partners, Ltd., San Rafael, Calif.
Filed Oct. 17, 1980, Ser. No. 182,416
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—191



271,603
PHYSICAL EXERCISER
James H. Berner, 121 Merritt Way, Sacramento, Calif. 95825
Filed Nov. 27, 1981, Ser. No. 325,115
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—195

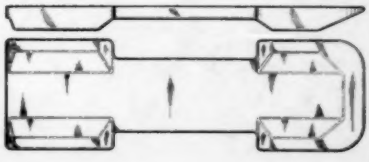


271,604
GOLF PUTTER HEAD
Frank B. Stone, Rte. #3, Box 297, Woodruff, S.C. 29388, and Robert L. Hatcher, Salisbury, N.C., assignors to Frank B. Stone, Woodruff, S.C.
Filed Jun. 11, 1981, Ser. No. 272,567
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—217

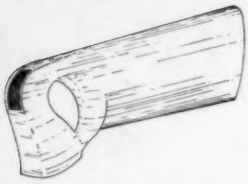


271,605
CAP FOR SKATE WHEEL OR SIMILAR ARTICLE
Michael Esposito, and Dominic Esposito, both of 330 S. Regent St., Port Chester, N.Y. 10573
Filed Oct. 24, 1980, Ser. No. 200,374
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D21—226

271,606
MARINE RESCUE AND RECREATIONAL BOARD
Charles D. Corey, 5 Jones La., Huntington, N.Y. 11743, and Francesco A. Pia, 3 Boulder Brae La., Larchmont, N.Y. 10538
Continuation-in-part of Ser. No. 82,278, Oct. 5, 1979, abandoned. This application Oct. 9, 1981, Ser. No. 309,996
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D21—228

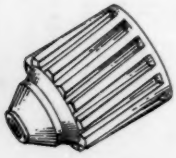


271,607
GUN STOCK
Aspenwall, John E., 1327 Madrid Way, Sandy, Utah 84070
Filed Aug. 17, 1981, Ser. No. 293,350
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—6

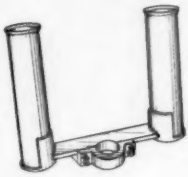


271,608
RIFLE SLING
Randall B. Finley, 362 S. 100 W., Orem, Utah 84057
Filed Oct. 5, 1981, Ser. No. 308,257
Term of patent 14 years
Int. Cl. D22—*01*
U.S. Cl. D22—7

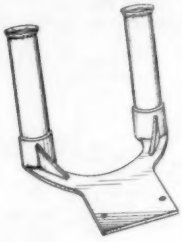
271,609
PROJECTILE FOR A SHOTGUN
Worthy H. Brown, R.D. #2, Box 268, Gillette Rd., Mexico, N.Y. 13114
Filed Jul. 10, 1981, Ser. No. 282,156
Term of patent 14 years
Int. Cl. D22—*03*
U.S. Cl. D22—10



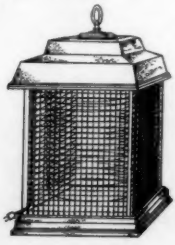
271,610
CLAMPABLE FISHING ROD HOLDER
Michael G. Lummis, Portage, Mich., assignor to Pacific-Atlantic Products, Ltd., Kalamazoo, Mich.
Filed Dec. 28, 1981, Ser. No. 334,973
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—13



271,611
FISHING ROD HOLDER
Michael G. Lummis, Portage, Mich., assignor to Pacific-Atlantic Products, Ltd., Kalamazoo, Mich.
Filed Dec. 28, 1981, Ser. No. 334,974
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—13

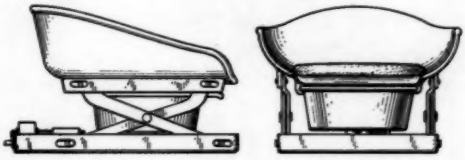


271,612
ELECTRIC INSECT KILLER
Harold N. Minick; Russell O. Blanchard, both of Marshall, Mich., and Donald L. Townsend, St. Louis, Mo., assignors to Emerson Electric Co., St. St. Louis, Mo.
Filed Aug. 21, 1981, Ser. No. 295,245
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19

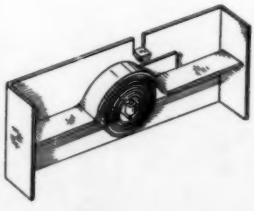


271,613
PAINT SPRAYER
Donald E. Watkins, Parma, Ohio, assignor to The Wooster Brush Company, Wooster, Ohio
Filed Jan. 12, 1981, Ser. No. 224,611
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—18

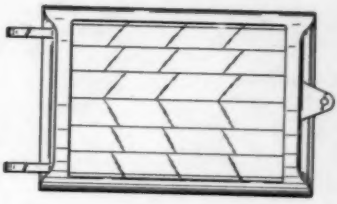
271,614
ADJUSTABLE COMMODE CHAIR
James W. Martin, Midlothian Country Club Grounds, Midlothian, Ill. 60445
Filed May 26, 1981, Ser. No. 266,941
Term of patent 14 years
Int. Cl. D23—*02*
U.S. Cl. D23—48



271,615
DAMPER UNIT
John Prikkel, III, Dayton; Dale R. Booher, and Jeffrey R. Killin, both of Fairborn, all of Ohio, assignors to Energy Vent, Inc., Dayton, Ohio
Filed Apr. 6, 1981, Ser. No. 251,207
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—127



271,616
STOVE FRONT
William Albinson, and Fred Albinson, both of 4018 W. 21st Ave., Vancouver, B.C., Canada V65 1H9
Filed Nov. 3, 1981, Ser. No. 317,768
Claims priority, application Canada, Oct. 5, 1981, 05-10-81-1
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—128

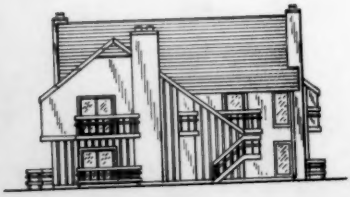


271,617
DENTAL ROOT-CANAL BROACH HANDLE
Henri Leonard, Besancon, France, assignor to Micro-Mega S.A., Besancon, France
Filed Mar. 27, 1981, Ser. No. 248,227
Claims priority, application Hague, Oct. 30, 1980, N DM/000416; Nov. 20, 1980, N DM/000447
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—10

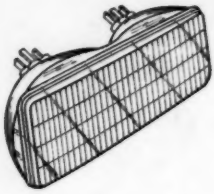
271,618
ADAPTOR FOR ENDOSCOPE
Shinichi Nishigaki, Hachioji, Japan, assignor to Olympus Optical Co., Ltd., Japan
Filed Jun. 29, 1981, Ser. No. 278,670
Claims priority, application Japan, Mar. 13, 1981, 56-10637
Term of patent 14 years
Int. Cl. D24—*02;* D16—*05*
U.S. Cl. D24—18

271,619
SPECIMEN CUP ASSEMBLY FOR A CLINICAL CHEMISTRY ANALYZER
Raymond J. Herrmann, Westlake, Ohio, assignor to Corning Glass Works, Corning, N.Y.
Filed Jul. 30, 1982, Ser. No. 404,478
Term of patent 14 years
Int. Cl. D24—*02*
U.S. Cl. D24—29

271,620
BUILDING STRUCTURE
Jack P. DeBoer, Wichita, Kans., assignor to The Residence Inn Corp., Wichita, Kans.
Filed Nov. 27, 1981, Ser. No. 325,217
Term of patent 14 years
Int. Cl. D25—*03*
U.S. Cl. D25—17



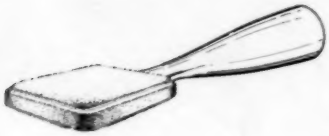
271,621
DUAL HEADLIGHT ASSEMBLY
Garo M. Ziver, Pine City, N.Y., assignor to Corning Glass Works, Corning, N.Y.
Filed Jul. 15, 1981, Ser. No. 283,681
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D26—35



271,622
POUCH FOR SMOKING MATERIALS
Doris A. Holloway, Rte. 3, Box 315, Bowling Green, Ky. 42101
Filed Dec. 15, 1980, Ser. No. 216,390
Term of patent 14 years
Int. Cl. D27—*06*
U.S. Cl. D27—44

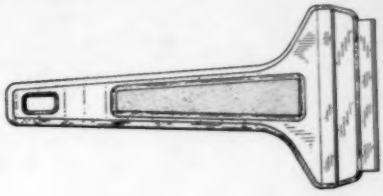
271,623
ANIMAL CAPSULE
Barbara E. Simpson, Indianapolis, Ind., and Norman A. Gervais, Hardy, Va., assignors to Eli Lilly and Company, Indianapolis, Ind.
Filed Apr. 27, 1981, Ser. No. 258,223
Term of patent 14 years
Int. Cl. D28—*01*
U.S. Cl. D28—2

271,624
LOTION APPLICATOR
Ralph E. Paulson, 14802 Grevilles Ave., Lawndale, Calif. 90260
Filed Apr. 30, 1981, Ser. No. 258,957
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—7



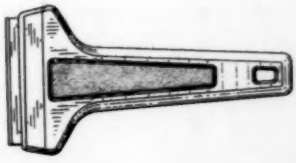
271,625
RAZOR HANDLE
Michael J. Gray, Duxbury, Mass., assignor to The Gillette Company, Boston, Mass.
Continuation-in-part of Ser. No. 359,876, Mar. 19, 1982. This application Sep. 28, 1982, Ser. No. 425,264
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D28—48

271,626
WINDSHIELD CLEANER
Harold F. Bauer, Newton, Kans., assignor to Conchemco, Incorporated, Overland Park, Kans.
Filed Oct. 16, 1981, Ser. No. 312,140
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—42



271,627
WINDSHIELD CLEANER
Harold F. Bauer, Newton, Kans., assignor to Conchemco, Incorporated, Overland Park, Kans.
Filed Nov. 16, 1981, Ser. No. 321,690
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—42

271,628
WINDSHIELD CLEANER
Harold F. Bauer, Newton, Kans., assignor to Conchemco, Incorporated, Overland Park, Kans.
Filed Oct. 26, 1981, Ser. No. 314,710
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D32—49



REEXAMINATIONS

NOVEMBER 29, 1983

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 4,010,756 (140th)
HEART PACER LEAD WIRE WITH BREAK-AWAY NEEDLE

Jacques DuMont, Asnieres, and Jacques Romagne, Les Essarts le Roi, both of France, assignors to Ethicon, Inc., Somerville, N.J.

Reexamination Request No. 90/000,284, Nov. 8, 1982.
Reexamination Certificate for Patent No. 4,010,756, issued Mar. 8, 1977, Ser. No. 657,897, Feb. 13, 1976.
Claims priority, application France, Feb. 14, 1975, 75 04710
Int. Cl.[3] A61N *1/04*
U.S. Cl. 128—786

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1** and **10** are determined to be patentable as amended:

Claims **2–9**, dependent on amended claims, are determined to be patentable.

New claims **11–14** are added and determined to be patentable.

1. In a surgical electrode comprising

a. an electrically conductive wire,

b. a *metal* needle *having a pointed end and a blunt end, said needle being* attached *adjacent its blunt end* to and in electrical contact with said wire and having a substantially straight shank portion adjacent the point of attachment to said wire, and

c. a non-conductive coating over the exterior surface of the wire electrically insulating said wire over a major portion of the length thereof,

the improvement comprising providing a weakened zone in the needle adjacent the straight shank portion of said needle, *said electrically conductive wire terminating between said blunt end and said weakened zone* whereby said needle may be readily broken at said weakened zone *without said electrically conductive wire extending outwardly beyond said straight shank portion to thereby facilitate connection of said straight shank portion to an electrical device, including to a pacemaker or the like.*

B1 4,116,358 (141st)
WEATHER AND VAPOR SEAL FOR STORAGE TANK

John S. Kinghorn; Robert B. Wagoner, both of Houston, and Alfred J. Turala, Seabrook, all of Tex., assignors to Graver Tank & Mfg. Co., Inc., Pasadena, Tex.

Reexamination Request No. 90/000,214, Jun. 7, 1982.
Reexamination Certificate for Patent No. 4,116,358, issued Sep. 26, 1978, Ser. No. 797,465, May 16, 1977.
Int. Cl.[3] B65D *88/42, 88/46*
U.S. Cl. 220—222

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **1–9** and **11–15** having been finally determined to be unpatentable, are cancelled.

Claim **10** is determined to be patentable as amended:

New claim **16** is added and determined to be patentable.

16. In a storage tank having a cylindrical wall and a floating roof spaced from the wall by a rim space having a dimension between the wall and the roof which varies about an average dimension, a combined weather and vapor seal for covering the rim space, comprising:

a flexible shield comprising a plurality of adjacent flexible shield sections disposed around the perimeter of the roof and substantially completely covering the rim space, each such shield section having a first end rigidly connected to an upper portion of the floating roof and a second end extending toward the wall of the storage tank;

said shield being inclined upwardly from the horizontal toward the wall of the tank;

flexible means supported from said shield for engaging the inner surface of the wall, the combination of said shield and said flexible means diposed to extend from the upper portion of the roof to the wall at an acute angle A with respect to the horizontal, and each shield section having, when unflexed, a substantially linear dimension in the direction of its intended extension from the roof toward the wall which is greater than the average rim space dimension divided by the cosine of the angle A, such that, upon installation in the tank, each shield section flexes along its linear dimension to urge said flexible means against the tank wall;

said flexible means comprising a wiper blade having an upwardly facing top surface, a downwardly facing lower surface and a slot between the top and bottom surfaces of the wiper blade for receiving said shield sections;

vapor seal means associated with said shield sections for preventing the escape of vapors from within the tank and between the shield sections;

whereby the dimensioning of said shield ensures that said flexible means remains firmly pressed against the tank wall as the rim space varies so as to inhibit the release of vapors from the interior of the tank and to protect the interior of the tank from atmospheric contaminants, and said vapor seal means further inhibits the loss of vapors from the interior of the tank to the atmosphere; and

a plurality of resilient metal strips fastened to the underside of said shield sections and dimensioned to extend from the connection between a shield section and the roof to beyond and beneath the point where said shield section mates with said slot in said wiper blade, whereby after elevation of the roof to a point where said wiper blade extends above the wall of the tank, said resilient strips bear on the top of the tank wall when the roof descends so as to cover an interface between said shield and said wiper blade and prevent said interface from being held by the top of the tank wall.

B1 4,265,393 (142nd)
BOX CONSTRUCTION

Edgar L. Orchard, St. Louis County, Mo., assignor to Orco Sales Co. Inc., St. Louis, Mo.

Reexamination Request No. 90/000,204, May 24, 1982.
Reexamination Certificate for Patent No. 4,265,393, issued May 5, 1981, Ser. No. 83,237, Oct. 10, 1979.
Int. Cl.[3] B65D *5/10, 5/66, 45/00*
U.S. Cl. 229—40

AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

Claims **8** and **9**, having been finally determined to be unpatentable, are cancelled.

Claims **1, 2, 4, 5, 7,** and **10** are determined to be patentable as amended:

Claims **3** and **6**, dependent on amended claims, are determined to be patentable.

New claims **11–14** are added and determined to be patentable.

1. A box construction having a bottom wall, parallel side walls, front and back walls, a top wall closure *having a front free end, opposite side edge portions, and being* swingable about its rearward end upon said rear wall for movement between raised, box-open and lowered, box-closed condition, latch tabs extending downwardly from said top wall when in closed condition, keeper-forming means provided in said side walls for accepting said latch tabs when the box is in closed condition, and stop means projecting laterally *outwardly beyond the adjacent side walls of the container, the adjacent side edge portion of the top wall, and the adjacent latch tab when the box is in closed condition, in which latter condition said stop means are* [of said box] immediately rearwardly of said latch tabs [when the box is in closed condition] for detent relationship with the rearward edges of said latch tabs to inhibit accidental opening of said box.

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF NOVEMBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Nattermann & Cie GmbH: *See*—
Welter, Andre; Christiaens, Leon; and Wirtz-Peitz, Ferdinand, 4,418,069., Cl. 424-269.000.

Abbott Laboratories: *See*—
Genese, Joseph N.; and Muetterties, Andrew J., 4,417,577., Cl. 604-81.000.
McAlpine, James B.; and Carney, Ronald E., 4,418,193., Cl. 536-16.100.

Abbott, Philip A.; Dailey, James E.; Karsan, Demir I.; and Mangiavacchi, Andrea, to Brown & Root, Inc. Mooring and supporting apparatus and methods for a guyed marine structure. 4,417,831., Cl. 405-227.000.

Abe, Fumiyoshi; and Okafuji, Takayuki, to Sony Corporation. DC Motor control circuit. 4,418,303., Cl. 318-254.000.

Abe, Michio; and Maeda, Naoyuki, to Tokai TRW & Co., Ltd. Electrically driven oil pressured power steering apparatus. 4,417,640., Cl. 180-142.000.

Abe, Yoshihiro, to Ashai Glass Company Ltd.; and Abe, Yoshihiro. Method of producing crystallized glass from phosphate glass. 4,417,912., Cl. 65-33.000.

Abt, Anton; Dettelbach, Alfred; and Gresser, Gerhard, to Reich Spezialmaschinen GmbH. Melting and application device for melting adhesives. 4,417,675., Cl. 222-146.0HE.

Adachi, Takashi: *See*—
Tamai, Masaharu; Morimoto, Shigeo; Adachi, Takashi; Oguma, Kiyoshi; Hanada, Kazunori; and Omura, Sadafumi, 4,418,075., Cl. 424-278.000.

Adair, Edwin L., to Urology Group, P.C., The. Combined surgical instrument and tube holder device. 4,417,710., Cl. 248-51.000.

Adeka Argus Chemical Co., Ltd.: *See*—
Nakahara, Yutaka; Kubota, Naohiro; Hirai, Bunji; and Haruna, Tohru, 4,418,196., Cl. 546-242.000.

Adeline, Joseph B. Means for mounting a crane on a load carrying platform. 4,417,665., Cl. 212-224.000.

Adler, Harvey J., to Technicon Instruments Corporation. Solute transfer technique. 4,418,039., Cl. 422-82.000.

Admiral Maschinenfabrik GmbH: *See*—
Johnson, Vincent L.; and Moser, Kurt, 4,418,041., Cl. 422-133.000.

Afian, Viktor V.: *See*—
Lidorenko, Nikolai S.; Afian, Viktor V.; Vartanian, Albert V.; Martirosian, Ruben G.; Ryabikov, Stanislav V.; and Strebkov, Dmitry S., 4,418,238., Cl. 136-246.000.

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Robinson, Alan A., 4,417,772., Cl. 308-10.000.

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Aisaka, Noboru; Nishikawa, Shigeru; Shibuya, Atsuo; Bessho, Yasuo; Akami, Hitoshi; and Ogawa, Shigeo, 4,417,401., Cl. 33-175.000.

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Bauer, Walter; Farber, Heinrich; and Kluge, Reimund, 4,418,420., Cl. 378-187.000.
Bergthaller, Peter; Schenk, Gunther; Wolfrum, Gerhard; Runzheimer, Hans-Volker; and Heidenreich, Holger, 4,418,143., Cl. 430-562.000.
Langen, Hans; Wolff, Erich; and Ranz, Erwin, 4,418,142., Cl. 430-549.000.
Notzel, Joachim; Schatz, Anton; Buczek, Harthmuth; and Kirchhof, Gunther, 4,417,809., Cl. 355-46.000.

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Zwezerynen, Johannes C. W., 4,417,653., Cl. 198-718.000.

Ailor, James C.: *See*—
Iyer, Sankar P.; Lewis, Roy D.; Klein, H. Joseph; Hord, William C.; and Ailor, James C., 4,417,617., Cl. 164-254.000.

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Stockman, Richard F., 4,417,615., Cl. 164-94.000.

Air Products and Chemicals, Inc.: *See*—
Hegarty, William P.; and Schmidt, William P., 4,417,449., Cl. 62-28.000.
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Turcotte, Michael G., 4,418,214., Cl. 564-479.000.

Airco, Inc.: *See*—
Weltmer, William R., Jr., 4,417,909., Cl. 62-12.000.

Aisaka, Noboru; Nishikawa, Shigeru; Shibuya, Atsuo; Bestho, Yasuo; Akami, Hitoshi; and Ogawa, Shigeo, to Agency of Industrial Science & Technology; and Ministry of International Trade & Industry. Garment measuring device. 4,417,401., Cl. 33-175.000.

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Furuta, Youichi, 4,417,445., Cl. 60-554.000.
Kumagai, Tadanobu; and Iwase, Yoshinobu, 4,417,880., Cl. 464-111.000.

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Aisaka, Noboru; Nishikawa, Shigeru; Shibuya, Atsuo; Bessho, Yasuo; Akami, Hitoshi; and Ogawa, Shigeo, 4,417,401., Cl. 33-175.000.

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Tanaka, Hiroaki; and Akita, Shigeyuki, 4,418,347., Cl. 340-870.370.

Akita, Sigeyuki: *See*—
Tanaka, Hiroaki; and Akita, Sigeyuki, 4,418,348., Cl. 340-870.370.

Akita, Yoshio: *See*—
Torii, Koshi; Maruyama, Toshinori; Akita, Yoshio; and Teshima, Takanori, 4,418,311., Cl. 320-48.000.

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Akzona Incorporated: *See*—
Battey, Paul K.; and Hope, Peter, 4,418,022., Cl. 260-944.000.
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Albert Einstein College of Medicine at Yeshiva University, The: *See*—
Lalezari, Iraj, 4,418,059., Cl. 424-180.000.

Alexander, Alva P., Jr.: *See*—
Granger, Robert L.; and Alexander, Alva P., Jr., 4,417,883., Cl. 493-403.000.

Alfter, Franz-Werner: *See*—
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Alkor GmbH Kunstoffverkauf: *See*—
Landler, Josef; and Mayr, Max, 4,418,106., Cl. 428-89.000.

Allegheny Ludlum Steel Corporation: *See*—
Maurer, Jack R., 4,417,921., Cl. 75-125.000.

Allen-Bradley Company: *See*—
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Allen Group Inc., The: *See*—
Allgor, Clarence B.; St. Clair, Clair J.; and Pearson, Richard A., 4,418,388., Cl. 364-431.010.

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Allied Corporation: *See*—
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Kuo, Vincent H. S.; and Wamser, Christian A., 4,417,996., Cl. 252-175.000.
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Allied Paper Incorporated: *See*—
Shaw, Michael J., 4,418,117., Cl. 428-327.000.

Allis-Chalmers Corporation: *See*—
Hacker, Richard K.; and Tesch, James F., 4,417,850., Cl. 415-142.000.
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Altobellis, Richard M.: *See*—
Applequist, Roy A.; Altobellis, Richard M.; and Hoppe, Robert F., 4,418,369., Cl. 360-98.000.

Alvarez, Luis W.; and Schwemin, Arnold J., to Schwem Instruments. Stabilized zoom binocular. 4,417,788., Cl. 350-500.000.

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Amana Refrigeration, Inc.: *See*—
Jailor, John J.; and Thalacker, Ronald A., 4,418,261., Cl. 219-10.55R.

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Toth-Sarady, Eva; Ambrus, Gabor; Cseh, Gyorgy; Borvendeg, Janos; Moravcsik, Imre; and Mezey, Gabriella, 4,418,205., Cl. 560-39.000.

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Andrillon, Patrick: *See—*
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Angevine, Philip J.; and Lam, Chiu T., to Mobil Oil Corporation. Upgrading olefinic stocks via sequential hydroformylation/hydrogenation. 4,417,973., Cl. 208-46.000.

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Andersen, Harold W.; Andersen, Shirley R.; Zaner, Clifford; and Harrison, Charles H., 4,418,055., Cl. 424-126.000.

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Lockwood, George H., 4,417,691., Cl. 239-206.000.

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Apikos, Dominic A., to Atlantic Richfield Company. Graphited gear oils. 4,417,991., Cl. 252-29.000.

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Tsukiji, Yoshihiro; Maeda, Haruo; and Araki, Mikio, 4,417,486., Cl. 74-813.00R.

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Dyer, Alan; and Araya, Abraham, 4,418,048., Cl. 423-305.000.

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Miller, Jesse D., Jr.; Tshudy, James A.; and Unruh, Ralph E., 4,418,109., Cl. 428-142.000.

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Edebo, Lars B.; Swede, Harald G.; and Tornqvist, Nils-Erik, 4,417,926., Cl. 134-17.000.

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DeWitt, Elmer J., 4,418,178., Cl. 525-97.000.
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Babcock-BSH Aktiengesellschaft: *See—*
Eibich, Peter, 4,417,406., Cl. 34-155.000.

Bacehowski, David; Measells, Paul; and Zabielski, Kenneth, to Baxter Travenol Laboratories, Inc. Method and apparatus for joining materials. 4,417,753., Cl. 285-21.000.

Backer, Lothar: *See—*
Dhein, Rolf; Backer, Lothar; and Schoeps, Jochen, 4,418,174., Cl. 524-539.000.

Backman, Keith C.: *See—*
Ptashne, Mark; Lauer, Gail D.; Roberts, Thomas M.; and Backman, Keith C., 4,418,149., Cl. 435-253.000.

Bader, Ramzi N., to Spectrol Electronics Corporation. Alarm device. 4,418,337., Cl. 340-571.000.

Bagnall-Wild, Ralph H.; Smith, Gordon R.; Stewart, John H.; and Ritchie, David S., to Barr & Stroud Limited. Tracking link. 4,418,361., Cl. 358-125.000.

Bailey, Terry R.: *See—*
May, David C.; and Bailey, Terry R., 4,418,110., Cl. 428-143.000.

Bakke, Jan; and Liaskar, Jermund, to Aktiebolaget Bofors. Method for gaseous phase nitration of aromatics. 4,418,230., Cl. 568-940.000.

Baliozian, Mardick, to Tekno AG. Device for the calculation of the characteristics of rectilinear geometric shapes. 4,417,399., Cl. 33-448.000.

Bamford, William C., to Molex Incorporated. Integrated circuit carrier assembly. 4,417,777., Cl. 339-17.0CF.

Banko, Anton, to Surgical Design. Ultrasonic transducer with energy shielding. 4,417,578., Cl. 128-303.00R.

Banks, Reginald G. S.; and Williams, Alan, to British Gas Corporation. Gas making. 4,417,905., Cl. 48-214.00A.

Bansal, Jai P., to International Business Machines Corporation. Latent image ram cell. 4,418,401., Cl. 365-95.000.

Baran, Ostap E. Double-wall surgical cuff. 4,417,576., Cl. 128-207.150.

Barclay, Donald J.; and Morgan, William M., to International Business Machines Corporation. Method of and solution for electroplating chromium and chromium alloys and method of making the solution. 4,417,955., Cl. 204-43.00R.

Bard, George D.: *See—*
Dawson, W. Clifford; Bard, George D.; Smith, Luther W.; and Laurin, Bernard L., 4,417,790., Cl. 351-166.000.

Barnette, William E.; and Jebens, Robert W., to RCA Corporation. Lens positioning controller for optical playback apparatus. 4,418,405., Cl. 369-45.000.

Baron, Gunter, to Bayerische Motoren Werke AG. Kickstand for a motorcycle. 4,417,746., Cl. 280-301.000.

Barr & Stroud Limited: *See—*
Bagnall-Wild, Ralph H.; Smith, Gordon R.; Stewart, John H.; and Ritchie, David S., 4,418,361., Cl. 358-125.000.

Barthel, Horst K. F. High temperature solid fire starter. 4,417,900., Cl. 44-34.000.

Bartholomew, Bruce J., to General Dynamics Corporation/Convair Div. Non-scanned heterodyne imaging sensor. 4,417,813., Cl. 356-349.000.

Bartlett, Peter G., to Automation Systems, Inc. Two phase induction motor circuit with series connected center-tapped stator windings. 4,418,309., Cl. 318-818.000.

BASF Aktiengesellschaft: *See—*
Danz, Eckehard; and Krome, Gerd, 4,418,233., Cl. 570-239.000.
Heinz, Gerhard; Schmitt, Burghard; Dorn, Ingo H.; Gausepohl, Hermann; Gerberding, Karl; Jung, Rudolf H.; Mittnacht, Hans; Pohrt, Jurgen; and Witimer, Paul, 4,418,180., Cl. 525-314.000.
Himmele, Walter; and Hoffmann, Werner, 4,418,216., Cl. 568-497.000.
Lungershausen, Rolf; Martin, Christoph; Marcinowski, Stefan; Siegel, Hardo; and Kuesters, Werner, 4,418,146., Cl. 435-106.000.
Muench, Volker; Naarmann, Herbert; and Penzien, Klaus, 4,418,187., Cl. 526-259.000.
Sander, Bruno; Hovemann, Friedrich; and Scherling, Kurt, 4,417,976., Cl. 208-188.000.
Seitz, Werner; Scheib, Klaus; and Michel, Alfred, 4,418,017., Cl. 260-465.00E.

Batchelder, J. Samuel. Method and apparatus for providing a dielectrophoretic display of visual information. 4,418,346., Cl. 340-787.000.

Bateman, Glenn, to Tektronix, Inc. Logarithmic amplifier utilizing positive feedback. 4,418,317., Cl. 328-145.000.

Battelle Development Corporation: *See—*
Cysewski, Gerry R.; and Anderson, Daniel B., 4,417,415., Cl. 47-1.400.
Putnam, Abbott A., 4,417,868., Cl. 431-1.000.

Battelle Institut e.V.: *See—*
Lohberg, Peter, 4,417,632., Cl. 177-212.000.

Battey, Paul K.; and Hope, Peter, to Akzona Incorporated. Phosphoramidates containing a p-phenylenediamine group. 4,418,022., Cl. 260-944.000.

Bauer, Marshall, to Nation Enterprises, Inc. Dough forming mold assembly. 4,417,867., Cl. 425-394.000.

Bauer, Walter; Farber, Heinrich; and Kluge, Reimund, to AGFA-Gevaert Aktiengesellschaft. Method and arrangement for gripping X-ray film. 4,418,420., Cl. 378-187.000.

Baum, Heinz W.: *See—*
Cotter, Edmund; Whatley, Francis; and Baum, Heinz W., 4,417,647., Cl. 188-73.380.

Bauman, Robert A.; and Pierce, Robert C., to Colgate-Palmolive Company. Detergent composition providing antistatic properties. 4,418,011., Cl. 252-544.000.

Baumgen, Heinz: *See—*
Probst, Joachim; Kolb, Gunter; Muller, Friedhelm; and Baumgen, Heinz, 4,418,175., Cl. 524-555.000.

Baur, Rolf; and Diemer, Wolfgang, to Schenk Filterbau GmbH. Filtration apparatus. 4,417,980., Cl. 210-91.000.

Baxter Travenol Laboratories, Inc.: *See—*
Bacehowski, David; Measells, Paul; and Zabielski, Kenneth, 4,417,753., Cl. 285-21.000.
Dennehey, T. Michael; and Peterson, Charles K., 4,417,890., Cl. 604-256.000.

Bayer Aktiengesellschaft: *See—*
Dhein, Rolf; Backer, Lothar; and Schoeps, Jochen, 4,418,174., Cl. 524-539.000.
Hennemann, Manfred; Andree, Hans; Lehmann, Rudolf; Schnegelberger, Harald; and Bellinger, Horst, 4,417,895., Cl. 8-137.000.
Kramer, Wolfgang; Buchel, Karl H.; Haller, Ingo; and Plempel, Manfred, 4,418,072., Cl. 424-273.00R.
Maurer, Fritz; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,418,073., Cl. 424-273.00P.
Muller, Ernst-Willi; and Rathjen, Claus, 4,418,030., Cl. 264-142.000.
Probst, Joachim; Kolb, Gunter; Muller, Friedhelm; and Baumgen, Heinz, 4,418,175., Cl. 524-555.000.
Rasshofer, Werner; Kopp, Richard; and Paul, Reiner, 4,418,159., Cl. 521-121.000.
Rasshofer, Werner; Dieterich, Dieter; and Meyborg, Holger, 4,418,160., Cl. 521-159.000.
Schreiner, Kurt; and Jager, Horst, 4,418,015., Cl. 260-242.200.

Bayerische Motoren Werke AG: *See—*
Baron, Gunter, 4,417,746., Cl. 280-301.000.

Bear Medical Systems, Inc.: *See—*
De Vries, Douglas F., 4,417,573., Cl. 128-204.250.

Bechai, Nabil R.; and Cousin, Alan J. Apparatus and method of internal examination of gastro intestinal tract and adjacent organs. 4,417,583., Cl. 128-660.000.

Becker, Anton, to Maschinenfabrik Buckau R. Wolf Aktiengesellschaft. Ball swivel joint for an excavator or the like. 4,417,773., Cl. 308-178.000.

Becker, Charles A., to General Electric Company. Method of fabricating high density electronic circuits having very narrow conductors. 4,417,393., Cl. 29-846.000.

Beckman Instruments, Inc.: *See—*
Horrocks, Donald L., 4,418,281., Cl. 250-328.000.
Horrocks, Donald L., 4,418,282., Cl. 250-366.000.
Smith, Leland B.; and McIntyre, Robert A., 4,417,590., Cl. 128-731.000.

Becquelet, Louis E., to Nuitoni Foods Corporation. Process for manufacturing frozen food products composed of layers of pasta and sauce. 4,418,085., Cl. 426-297.000.

Becton, Dickinson and Company: *See—*
Nugent, Edward L., 4,417,981., Cl. 210-209.000.

Bedwell, Junion L.; and Overton, Harold C., to Republic Steel Corporation. Apparatus and method for reducing spangle in galvanized products. 4,418,100., Cl. 427-348.000.

Beeson, Karl W.; Bhattacharjee, Himangshu R.; and Hopf, Frederick R., to Allied Corporation. Thermally-stable, infrared-sensitive zinc oxide electrophotographic compositions element and process. 4,418,135., Cl. 430-93.000.

Beestman, George B.; and Deming, John M., to Monsanto Company. Encapsulation by interfacial polycondensation. 4,417,916., Cl. 71-93.000.

Behrens, Klaus: *See—*
Richter, Karl M.; Harder, Hans E.; and Behrens, Klaus, 4,418,422., Cl. 378-205.000.

Behrenz, Wolfgang: *See—*
Maurer, Fritz; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, 4,418,073., Cl. 424-273.00P.

Beladi, Ilona: *See—*
Kahan nee Laszlo, Ilona; Hammer, Helga; and Beladi, Ilona, 4,418,060., Cl. 424-227.000.

Bell, Lydia A. Needlework frame for handwork. 4,417,409., Cl. 38-102.910.

Bell Maschinenfabrik Aktiengesellschaft: *See—*
Britschgi, Hugo; Portmann, Bruno; and Berchtold, Louis, 4,417,982., Cl. 210-386.000.

Bell Telephone Laboratories, Incorporated: *See—*
Beni, Gerardo; and Hackwood, Susan, 4,417,786., Cl. 350-359.000.
Figler, Bernard A.; and Fingerman, Charles M., 4,418,312., Cl. 324-52.000.
Halvorsen, Henry J.; Marchetto, Albert V.; and Thomas, Edwin P., 4,417,778., Cl. 339-17.00M.
Lese, Gregory; and Nash, Donald H., 4,418,416., Cl. 375-5.000.

Bellafiore, Francis V., to Chicago Bridge & Iron Company. Apparatus for coating narrow vertical elongated spaces. 4,417,542., Cl. 118-306.000.

Bellinger, Horst: *See—*
Hennemann, Manfred; Andree, Hans; Lehmann, Rudolf; Schnegelberger, Harald; and Bellinger, Horst, 4,417,895., Cl. 8-137.000.

Bellus, Daniel: *See—*
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,418,199., Cl. 548-451.000.
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,418,200., Cl. 548-451.000.

Belmares-Sarabia, Armand: *See—*
Poetsch, Dieter; and Belmares-Sarabia, Armand, 4,418,358., Cl. 358-80.000.

Ben Clements & Sons, Inc.: *See—*
Furutsu, Akira, 4,417,682., Cl. 227-67.000.

Bendix Corporation, The: *See—*
Claxton, William B.; and Cromas, Joseph C., 4,417,694., Cl. 239-533.120.
Hall, James R.; and Whallon, William P., Jr., 4,417,395., Cl. 29-882.000.
Walter, Richard P., 4,417,557., Cl. 123-467.000.

Benedikt, George M.: *See—*
DeWitt, Elmer J.; Minchak, Robert J.; Lee, Biing-Lin; and Benedikt, George M., 4,418,179., Cl. 525-249.000.

Beni, Gerardo; and Hackwood, Susan, to Bell Telephone Laboratories, Incorporated. Devices based on surface tension changes. 4,417,786., Cl. 350-359.000.

Bennett, James G.; and Tungate, Freddie L., to General Electric Company. Preparation of ortho-alkylated phenols using magnesium compound catalysts. 4,418,224., Cl. 568-804.000.

Bennett, Robert W., to National Foam Systems, Inc. Variable proportioning valve for balanced pressure proportioning systems, and system containing the valve. 4,417,601., Cl. 137-556.600.

Benson, Inc.: *See—*
Rutherford, Sherman L.; Bliss, Arthur E.; and Schmidt, Noel J., 4,417,391., Cl. 29-825.000.

Beranek, Ivan; Kyral, Josef; Uhlir, Miroslav; and Zlesak, Ivan, to Spolek pro chemickou a hutni vyrobu, narodni podnik. Solid refining agents for the refining of aluminum and alloys thereof and method of preparing said agents. 4,417,923., Cl. 75-257.000.

Berchtold, Louis: *See—*
Britschgi, Hugo; Portmann, Bruno; and Berchtold, Louis, 4,417,982., Cl. 210-386.000.

Berentzem, Hardo, to Theodor Groz & Sohne; and Ernst Becker & Nadelfabrik Commandit-Gesellschaft. Needle for knitting machines and method for making same. 4,417,454., Cl. 66-123.000.

Berezoutzky, Georges, to Societe Francaine de Stockage Geologique "Goestock". Safety device for underground storage of liquefied gas. 4,417,829., Cl. 405-54.000.

Bergfeld, Manfred: *See—*
Zengel, Hans; and Bergfeld, Manfred, 4,418,211., Cl. 564-40.000.

Bergman, Gerard P. M.: *See—*
Schreiber, Peter; Steenfadt, Eberhard; and Bergman, Gerard P. M., 4,418,419., Cl. 378-040.000.

Bergmann, Gerhard; and Henz, Erhard. Thread positioning apparatus for a warp knitting machine. 4,417,456., Cl. 66-214.000.

Bergthaller, Peter; Schenk, Gunther; Wolfrum, Gerhard; Runzheimer, Hans-Volker; and Heidenreich, Holger, to Agfa-Gevaert Aktiengesellschaft. Color photographic recording material. 4,418,143., Cl. 430-562.000.

Bernat, Georg, to Friedrich Grohe Armaturenfabrik GmbH & Co. Valve. 4,417,933., Cl. 156-64.000.

Bernecki, Harry F.; Skuza, Voytech T.; Dulin, Kerry; Sridharan, Sri P.; Zabec, Glenn; and Edgell, James E., to Textron Inc. Electronic tacker. 4,417,681., Cl. 227-8.000.

Bernhard Beumer Maschinenfabrik KG: *See—*
Lauhoff, Heinz; and Boksmp, Alfons, 4,417,654., Cl. 198-815.000.

Bernot, Hartmut: *See—*
Tremmel, Hartmut; and Bernot, Hartmut, 4,418,277., Cl. 235-472.000.

Bertl, Gerd, to Stettner & Co. Disc trimmer. 4,418,376., Cl. 361-293.000.

Bertolacini, Ralph J.: *See—*
Kim, Dae K.; and Bertolacini, Ralph J., 4,418,006., Cl. 502-73.000.

Bessho, Yasuo: *See—*
Aisaka, Noboru; Nishikawa, Shigeru; Shibuya, Atsuo; Bessho, Yasuo; Akami, Hitoshi; and Ogawa, Shigeo, 4,417,401., Cl. 33-175.000.

Bevan, Mark H.; and Kief, Garry C., to Hastings, Clayton, Tucker & Craig, Inc. Collapsible display booth. 4,417,774., Cl. 312-108.000.

Bey, Philippe; Gerhart, Fritz; Jung, Michel; and Schirlin, Daniel, to Merrell Toraude et Compagnie. Fluorinated amino-butyric acid and diaminobutane derivatives. 4,418,077., Cl. 424-309.000.

Bhattacharjee, Himangshu R.: *See—*
Beeson, Karl W.; Bhattacharjee, Himangshu R.; and Hopf, Frederick R., 4,418,135., Cl. 430-93.000.

Bhattacharyya, Bhupati R.; and Roe, William J., to Nalco Chemical Company. Dust control. 4,417,992., Cl. 252-88.000.

Bikker, Anthony, to Welltron Limited. Brake assemblies primarily for exercising apparatus. 4,417,724., Cl. 272-73.000.

Billeter, Henry R., to Sloan Valve Company. Empty and load brake system with separate proportional valve and load sensor valve means. 4,417,767., Cl. 303-23.00R.

Birchmeier, Alfons. Tissue perforator. 4,417,580., Cl. 128-315.000.

Birkle, Siegfried; and Stoger, Klaus, to Siemens Aktiengesellschaft. Electrolyte for the electrodeposition of aluminum. 4,417,954., Cl. 204-14.00N.

Birth, Winfrid, to Siemens Aktiengesellschaft. Four-wire terminating circuit. 4,418,249., Cl. 179-170.0NC.

Bishop, Robert M.; Payette, Lionel J.; and Pike, Roscoe A., to Essex Group, Inc. Dielectric films from water soluble polyimides. 4,418,190., Cl. 528-353.000.

Blackie, Merrick S.; and Collins, John R., to Courtaulds Limited. Process for spinning cellulose ester fibres. 4,418,026., Cl. 264-8.000.

Blackwell, Churchill G. Preservation of hops. 4,418,092., Cl. 426-600.000.

Blasius Industries, Inc.: *See—*
Hall, Harold E., 4,418,171., Cl. 524-268.000.

Bliss, Arthur E.: *See—*
Rutherford, Sherman L.; Bliss, Arthur E.; and Schmidt, Noel J., 4,417,391., Cl. 29-825.000.

Bliss & Laughlin Industries Incorporated: *See—*
Deibel, Christopher J.; and Massey, Edward W., 4,417,509., Cl. 99-467.000.

Bock, Gernot: *See—*
Theurer, Josef; and Bock, Gernot, 4,417,522., Cl. 104-7.00B.

Boeing Aerospace Company: *See—*
Wilkinson, Calvin L., 4,417,428., Cl. 52-172.000.

Boeing Company, The: *See—*
Lund, Wesley C., 4,417,835., Cl. 409-180.000.
Nelson, Paul E., 4,417,463., Cl. 72-430.000.

Boger, Manfred; and Ehrenfreund, Josef, to Ciba-Geigy Corporation. Phenylbenzoylureas. 4,418,066., Cl. 424-263.000.

Bohlen, Harald; Engelke, Helmut; Greschner, Johann; and Nehmiz, Peter, to International Business Machines Corporation. Method of making mask for structuring surface areas. 4,417,946., Cl. 156-643.000.

Bohm, Georg G. A.; Vescelius, Lee E.; and Hamed, Gary R., to Firestone Tire & Rubber Company, The. Thermoplastic elastomer blends with bitumen. 4,418,167., Cl. 524-68.000.

Bohme, Rolf, to Telefunken Electronic GmbH. Feedback amplifier or threshold value switch for a current feed differential stage. 4,418,321., Cl. 330-252.000.

Bohme, Rolf C.; van Zyl, Ian D.; and Lazerson, Max M., to General Mining Union Corporation, Limited. Volumetric measurement of particles. 4,417,817., Cl. 356-380.000.

Bohner, Beat: *See—*
Rohr, Otto; Pissiotas, Georg; Bohner, Beat; and Burdeska, Kurt, 4,417,918., Cl. 71-100.000.

Bohrmann, Hans; Campbell, Thomas; Grigoteit, Werner; and Muller, Gunter, to CPC International Inc. Starch containing food products and process for preparing same. 4,418,090., Cl. 426-578.000.

Bokamp, Alfons: *See—*
Lauhoff, Heinz; and Bokamp, Alfons, 4,417,654., Cl. 198-815.000.

Bollinger, David D., to Hobart Brothers Company. Battery charger control circuit. 4,418,310., Cl. 320-39.000.

Bonga, Benno I., to Ateliers des Charmilles, S.A. Waysless machine tool table. 4,417,843., Cl. 414-676.000.

Bonn, Jerrold L.: *See—*
Mahoney, Paul F.; and Bonn, Jerrold L., 4,418,319., Cl. 328-160.000.

Booher, Homer L. Device for dispensing tissue paper and sheet material. 4,417,670., Cl. 221-210.000.

Boor, Frank H., to Fairfield Manufacturing Co., Inc. Coupled planetary gear speed reducer for use in industrial vehicles. 4,417,485., Cl. 74-785.000.

Borvendeg, Janos: *See—*
Toth-Sarudy, Eva; Ambrus, Gabor; Cseh, Gyorgy; Borvendeg, Janos; Moravcsik, Imre; and Mezey, Gabriella, 4,418,205., Cl. 560-39.000.

Bose, Bimal K., to General Electric Company. Scalar decoupled control for an induction machine. 4,418,308., Cl. 318-803.000.

Bostick, Lewis M.: *See—*
Larson, Kenneth N.; Davis, John S.; and Bostick, Lewis M., 4,418,382., Cl. 364-200.000.

Bostock, James H.: *See—*
McCracken, Oliver W.; and Bostock, James H., 4,417,470., Cl. 73-154.000.

Bouette, David W., to Simon-Vicars Limited. Method and apparatus for producing a cellular food product. 4,418,089., Cl. 426-572.000.

Bourrez, Jean-Marie, to CII Honeywell Bull. Method and device for arbitration of access conflicts between an asynchronous trap and a program in a critical section. 4,418,385., Cl. 364-200.000.

Boyd, Ronald J.: *See—*
Anderson, Brenda L.; and Boyd, Ronald J., 4,417,648., Cl. 188-119.000.

Boykin, Otis F.: *See—*
Holmes, Curtis L.; Faber, William M., Sr.; Francis, Gaylord L.; and Boykin, Otis F., 4,418,009., Cl. 252-514.000.

Brachmann, Walter; Kornau, Horst; and Thiel, Klaus, to Metzeler Kautschuk GmbH. Vulcanizable rubber mixture and vulcanizing process for such a rubber mixture. 4,418,173., Cl. 524-425.000.

Bradley, Daniel J.: *See—*
Murray, Robert T.; and Bradley, Daniel J., 4,417,815., Cl. 356-349.000.

Braintech, Inc.: *See—*
Culver, Norman D., 4,417,591., Cl. 128-731.000.

Brandinger, Jay J., to RCA Corporation. Video disc pickup stylus. 4,418,407., Cl. 369-126.000.

Brantingham, George L.; and Graber, Warren S., to Texas Instruments Incorporated. Address decode system. 4,418,397., Cl. 364-900.000.

Braun Aktiengesellschaft: *See—*
Busch, Peter; and Schaefer, Horst, 4,417,820., Cl. 368-200.000.
Hoffmann, Harald; and Raducanu, Dan-Corneliz, 4,418,307., Cl. 318-721.000.

Braun, Helmut; Rinno, Helmut; and Rauterkus, Karl J., to Hoechst Aktiengesellschaft. Acetylacetoxyalkyl-allyl ethers. 4,418,207., Cl. 560-178.000.

Brehon, Garth A. Hand portable grain threshing apparatus. 4,417,593., Cl. 130-27.0HF.

Breitscheidel, Hans-Ulrich; Spielau, Paul; and Alfter, Franz-Werner, to Dynamit Nobel Aktiengesellschaft. Process for the continuous production of a length of stratifield material from foam particles. 4,417,932., Cl. 156-62.200.

Brenner, Robert A., to Whirlpool Corporation. Agitator mounted dispenser and shower spray device for automatic washer. 4,417,457., Cl. 68-17.00A.

Brezina, Josef, to SKODA. Tool providing for the automatic exchange of different working fixtures. 4,417,377., Cl. 29-26.00A.

Brien, Joseph E.: *See—*
Kindl, George F.; Michaud, Orean E.; and Brien, Joseph E., 4,417,816., Cl. 356-357.000.

Briggs, William F.; and Bullard, Edward M., to Mobil Oil Corporation. Coextruded thermoplastic stretch-wrap. 4,418,114., Cl. 428-218.000.

Bristol Babcock Inc.: *See—*
Molusis, Anthony J.; and O'Loughlin, Thomas M., 4,418,381., Cl. 364-131.000.

Britax (Wingard) Limited: *See—*
Packington, Simon D., 4,417,751., Cl. 280-802.000.

British Gas Corporation: *See—*
Banks, Reginald G. S.; and Williams, Alan, 4,417,905., Cl. 48-214.00A.

British Hovercraft Corporation Ltd.: *See—*
Hardy, Derek J.; and Eldridge, Michael W., 4,417,637., Cl. 180-116.000.

Britschgi, Hugo; Portmann, Bruno; and Berchtold, Louis, to Bell Maschinenfabrik Aktiengesellschaft. Device for the dewatering of naturally moist lump peat. 4,417,982., Cl. 210-386.000.

Brodie, Durvis W. Ignition system for internal combustion engine. 4,417,563., Cl. 123-606.000.

Brogard, Paul D. Anti-theft device and method for deterring theft of mobile equipment. 4,417,644., Cl. 180-287.000.

Brooks, Joe: *See—*
Henson, George S.; and Brooks, Joe, 4,417,625., Cl. 166-387.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Oshima, Nobuyasu; and Tsumura, Tetsuya, 4,417,533., Cl. 112-235.000.

Brown, Boveri & Cif AG: *See—*
Strietzel, Rainer, 4,418,411., Cl. 371-67.000.

Brown, Christopher K.; Busler, Willard L.; and Wion, Donald A., to AMP Incorporated. Apparatus for applying heat shrinkable tubing. 4,417,378., Cl. 29-33.00M.

Brown, Richard A.; Byers, Lance R.; and Norris, Robert D., to FMC Corporation. Process for preparing thallium (III). 4,418,051., Cl. 423-592.000.

Brown, Robert J., to Datamedia Corporation. Video display terminal. 4,418,344., Cl. 340-726.000.

Brown & Root, Inc.: *See—*
Abbott, Philip A.; Dailey, James E.; Karsan, Demir I.; and Mangiavacchi, Andrea, 4,417,831., Cl. 405-227.000.

Brudny, Joseph, to Mencher, Alexander. Universal functional shoulder orthosis. 4,417,569., Cl. 128-77.000.

Bschorr, Oskar. Method and apparatus for damping vibrations in large structures, such as buildings. 4,417,427., Cl. 52-167.000.

Bubik, Alfred; and Hack, Kurt, to Escher Wyss GmbH. Papermaking machine containing two movable water pervious dewatering bands. 4,417,950., Cl. 162-300.000.

Buchel, Karl H.: *See—*
Kramer, Wolfgang; Buchel, Karl H.; Haller, Ingo; and Plempel, Manfred, 4,418,072., Cl. 424-273.00R.

Buczek, Harthmuth: *See—*
Notzel, Joachim; Schatz, Anton; Buczek, Harthmuth; and Kirchhof, Gunther, 4,417,809., Cl. 355-46.000.

Buffalo Bullet Company: *See*—
Dahlitz, Ronald R., 4,417,521., Cl. 102-511.000.

Buffon, Jean; and Trome, Edouard, to Societe Anonyme dite: Ulmic France. Device for manufacturing, by extrusion, a piece having a recessed portion in its peripheral surface. 4,417,461., Cl. 72-345.000.

Bugaut, Andree; and Andrillon, Patrick, to Societe Anonyme dite: L'Oreal. Hair dye compositions and new compounds useful therein. 4,417,896., Cl. 8-414.000.

Buhler, Ulrich: *See*—
Stahl, Theo; and Buhler, Ulrich, 4,417,897., Cl. 8-464.000.

Bulanda, John J.: *See*—
Moody, Roy A.; Bulanda, John J.; Guzay, Cazimir M.; and Schoenfeld, David R., 4,417,394., Cl. 29-882.000.

Bullard, Edward M.: *See*—
Briggs, William F.; and Bullard, Edward M., 4,418,114., Cl. 428-218.000.

Bunnelle, William L.; and Lindmark, Richard C., to H. B. Fuller Company. Extrudable self-adhering elastic and method of employing same. 4,418,123., Cl. 428-517.000.

Burdeska, Kurt: *See*—
Rohr, Otto; Pissiotas, Georg; Bohner, Beat; and Burdeska, Kurt, 4,417,918., Cl. 71-100.000.

Burl, Michael: *See*—
Young, Ian R.; Hounsfield, Godfrey N.; and Burl, Michael, 4,418,316., Cl. 324-309.000.

Burnett, Dorothy K. Signal display system and luminaire apparatus for operating same. 4,418,334., Cl. 340-332.000.

Burney, Harry S., Jr.: *See*—
Ezzell, Bobby R.; and Burney, Harry S., Jr., 4,417,961., Cl. 204-98.000.

Burns, Lyle D.; and Parlman, Robert M., to Phillips Petroleum Company. N,N'-Dialkyl-N,N'-diphenyl alkylene diamine derivatives as antiknock agents. 4,417,904., Cl. 44-72.000.

Burry, Donald L., to General Motors Corporation. Occupant restraint system. 4,417,750., Cl. 280-753.000.

Burt, Dennis W. Optical fibre U.V. and/or I.R. line fire detector. 4,418,338., Cl. 340-578.000.

Burton, Charles A., to Rimrock Corporation. Programmable positioning and operating mechanism for industrial operating head. 4,417,845., Cl. 414-733.000.

Busby, Robert A.; Nat, Gursharan P. S.; and Stearley, John W., to Eaton Corporation. One piece operator for electric switch having pivoting and sliding contactor. 4,418,254., Cl. 200-68.300.

Busch, Lloyd E.: *See*—
Myers, George D., deceased; and Busch, Lloyd E., 4,417,975., Cl. 208-120.000.

Busch, Peter; and Schaefer, Horst, to Braun Aktiengesellschaft. Time-keeping device, especially a quartz-controlled clock. 4,417,820., Cl. 368-200.000.

Busler, Willard L.: *See*—
Brown, Christopher K.; Busler, Willard L.; and Wion, Donald A., 4,417,378., Cl. 29-33.00M.

Butts, Gary C.: *See*—
Muller, Michael; and Butts, Gary C., 4,418,257., Cl. 200-159.00B.

Byers, Lance R.: *See*—
Brown, Richard A.; Byers, Lance R.; and Norris, Robert D., 4,418,051., Cl. 423-592.000.

C. R. Bard, Inc.: *See*—
Meisch, Charles E., 4,417,892., Cl. 604-323.000.

C. Reichert Optische Werke AG: *See*—
Danner, Lambert J., 4,417,787., Cl. 350-414.000.

Cabot Corporation: *See*—
Iyer, Sankar P.; Lewis, Roy D.; Klein, H. Joseph; Hord, William C.; and Ailor, James C., 4,417,617., Cl. 164-254.000.

Cain, Edwin F. C.; and McFarlen, William T., to Rockwell International Corporation. Compliant interface for ceramic turbine blades. 4,417,854., Cl. 416-241.00B.

Callan, John E., to Allen-Bradley Company. Latch relay drive circuit. 4,418,374., Cl. 361-167.000.

CamAct Pump Corp.: *See*—
Justice, Orien N., 4,417,860., Cl. 417-415.000.

Cameo Container Corporation: *See*—
Mason, James J., 4,417,660., Cl. 206-500.000.

Cameron, Jacquelyn J.; and Myers, Chester D., to General Foods, Inc. Rapeseed protein isolate. 4,418,013., Cl. 260-123.500.

Campbell, Thomas: *See*—
Bohrmann, Hans; Campbell, Thomas; Grigoteit, Werner; and Muller, Gunter, 4,418,090., Cl. 426-578.000.

Campbell, Willis R., to Sperry Corporation. Method of adjusting apron tension in roll baling machines. 4,417,436., Cl. 56-341.000.

Camras, Marvin, to IIT Research Institute. Video disc transducer system. 4,418,365., Cl. 358-342.000.

Canavesi, Luigi: *See*—
De Gaetano, Mario; and Canavesi, Luigi, 4,418,016., Cl. 260-404.000.

Canon Kabushiki Kaisha: *See*—
Kano, Ichiro, 4,417,789., Cl. 350-513.000.
Katagiri, Kazuharu; Umehara, Shoji; Watanabe, Katsunori; and Ishikawa, Shozo, 4,418,133., Cl. 430-58.000.
Kishi, Hirotoshi, 4,417,805., Cl. 355-14.00R.
Mitsuhashi, Yasuo; and Kiuchi, Masashi, 4,418,137., Cl. 430-109.000.
Senuma, Michio, 4,417,797., Cl. 354-234.000.
Sugiura, Yoji; Hagiwara, Toshio; Okumura, Toru; and Nakahara, Syunichi, 4,417,796., Cl. 354-152.000.
Tamura, Shuichi; Suzuki, Toyotoni; Tamamura, Hideo; and Matsuda, Mutsuhide, 4,417,795., Cl. 354-25.000.

Cantenot, Francois, to M.B.E. Minoterie Biscotterie d'Echenon. Process for preparing a food product. 4,418,088., Cl. 426-549.000.

Cappon, Arthur M.: *See*—
Caerhalmi, Nicholas B.; and Cappon, Arthur M., 4,418,292., Cl. 307-443.000.

Caracciolo, Gerald T.: *See*—
Heagerty, William F.; Caracciolo, Gerald T.; and Gehweiler, William F., 4,418,402., Cl. 365-156.000.

Carl, William P.: *See*—
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,417,969., Cl. 204-252.000.

Carney, Ronald E.: *See*—
McAlpine, James B.; and Carney, Ronald E., 4,418,193., Cl. 536-16.100.

Carrier Corporation: *See*—
Copenhaver, Lloyd F., 4,417,869., Cl. 431-21.000.

Carstens, Ronald, to Key Tech Corporation. Non-skid surface compositions for paper products. 4,418,111., Cl. 428-145.000.

Case, James E.; Ruppert, Richard L.; and Manning, Lindley, to Dayton Superior Corporation. Apparatus for erecting concrete wall panels. 4,417,425., Cl. 52-125.500.

Casio Computer Co., Ltd.: *See*—
Kariya, Yutaka, 4,418,412., Cl. 371-68.000.

Cassella Aktiengesellschaft: *See*—
Danek, Georg, 4,418,014., Cl. 260-125.000.
Stahl, Theo; and Buhler, Ulrich, 4,417,897., Cl. 8-464.000.

Cassoli, Eduardo: *See*—
Schildknecht, Othmar; and Cassoli, Eduardo, 4,417,676., Cl. 225-4.000.

Castile, Brett D.: *See*—
Gordon, Alan; Watson, Stanley J.; Cowen, Steven J.; Mackelburg, Gerald; and Castile, Brett D., 4,418,404., Cl. 367-132.000.

Catapano, Michael C.: *See*—
Noe, Renato R.; and Catapano, Michael C., 4,417,465., Cl. 73-49.500.

Caterpillar Tractor Co.: *See*—
Stevenson, Thomas T.; and Zenios, Marios C., 4,417,469., Cl. 73-119.00A.

Cathignol, Dominique; and Chapelon, Jean-Yves, to Institut National de la Sante et de la Recherche Medicale. Real-time measuring method and apparatus displaying flow velocities in a segment of vessel. 4,417,584., Cl. 128-663.000.

Cavaiani, Randy J.: *See*—
Schwarzbach, Richard J.; Keeler, Manley S.; Cavaiani, Randy J.; and Chapman, Michael K., 4,418,333., Cl. 340-310.00A.

Cave, Eric F.; and Cowden, James J., to RCA Corporation. Stylus manufacturing method. 4,417,423., Cl. 51-283.00R.

Celotex Corporation, The: *See*—
Frentzel, Richard L., 4,418,158., Cl. 521-115.000.

Centrale Veevoederfabriek "Sloten": *See*—
Glas, Cor, 4,418,091., Cl. 426-580.000.

Centre de Recherches Metallurgiques: *See*—
Paulus, Philippe, 4,417,720., Cl. 266-112.000.

Cerberus AG: *See*—
Genahr, Rudolf, 4,418,335., Cl. 340-565.000.

Chadwick, James B., to Hydraulics & Fabrications Pty. Ltd. Loader and transporter. 4,417,841., Cl. 414-346.000.

Champion International Corporation: *See*—
Korte, Ralph J., 4,417,685., Cl. 229-41.00B.
Roccaforte, Harry L., 4,417,661., Cl. 206-625.000.
Roccaforte, Harry L., 4,417,678., Cl. 225-43.000.

Chandler Evans Inc.: *See*—
Sundberg, Jack G., 4,417,734., Cl. 277-93.0SD.

Chang, Clarence D.; and Lang, William H., to Mobil Oil Corporation. Conversion of synthesis gas to hydrocarboos enriched in linear alpha-olefins. 4,418,155., Cl. 518-719.000.

Chang, Marguerite S.; and Orndoff, Robert R., to United States of America, Navy. Synthesis of dimethylmethylene dinitramine. 4,418,212., Cl. 564-109.000.

Chang, Paul S., to AMP Incorporated. Automatic digital circuit for synchronizing with a variable baud rate generator. 4,418,322., Cl. 331-1.00A.

Chapelon, Jean-Yves: *See*—
Cathignol, Dominique; and Chapelon, Jean-Yves, 4,417,584., Cl. 128-663.000.

Chapman, Harry L.: *See*—
Polmansteer, Keith E.; and Chapman, Harry L., 4,418,165., Cl. 523-210.000.

Chapman, Michael K.: *See*—
Schwarzbach, Richard J.; Keeler, Manley S.; Cavaiani, Randy J.; and Chapman, Michael K., 4,418,333., Cl. 340-310.00A.

Charm, Orrin. Hanging device mounting system for devices such as speaker enclosures. 4,417,714., Cl. 248-323.000.

Charriere, Jean-Michel: *See*—
Mena, Andre; Charriere, Jean-Michel; and Desbrest, Jean, 4,417,920., Cl. 75-63.000.

Chattha, Mohinder S., to Ford Motor Company. High solids coatings from new tetrahydroxy oligomers. 4,418,182., Cl. 525-438.000.

Chazelas, Elie, to Societe Industrielle de Liaisons Electriques Silec. Electrical stress control electrode in combination with a junction end of a shielded insulated electrical conductor. 4,418,240., Cl. 174-73.00R.

Chelin, Charles R., to Towmotor Corporation. Self adjusting bearing arrangement. 4,417,769., Cl. 308-3.00R.

Chemical Dynamics, Inc.: *See*—
Koster, Harry D., 4,417,940., Cl. 156-351.000.
Chemische Werke Huls AG: *See*—
Rigler, Josef K.; Wienhofer, Ekkehard; Leithauser, Horst; and Trukenbrod, Karl, 4,418,156., Cl. 521-56.000.
Cheng, Dah Y., to International Power Technology, Inc. Control system for Cheng dual-fluid cycle engine system. 4,417,438., Cl. 60-39.050.
Cheng, Paul J., to Phillips Petroleum Company. Carbon black process. 4,418,050., Cl. 423-450.000.
Cherry, Carl J., to Combustion Engineering, Inc. Ceramic fiber refractory mixture. 4,417,925., Cl. 106-85.000.
Chesney, Joseph J., Jr.; and Schaefer, Robert E., to Tile Council of America, Inc. High temperature resistant adhesive bonding composition of epoxy resin and two-part hardener. 4,418,166., Cl. 523-400.000.
Chevron Research Company: *See*—
Haunschild, Willard M., 4,417,974., Cl. 208-75.000.
Honnen, Lewis R., 4,418,222., Cl. 568-793.000.
Chiang, Albert C., to Pitney Bowes Inc. Method for the production of high concentrations of emulsion polymers. 4,418,183., Cl. 526-80.000.
Chicago Bridge & Iron Company: *See*—
Bellafiore, Francis V., 4,417,542., Cl. 118-306.000.
Chicoine, Gustave J. Manually operated deacceleration warning system with vacuum controlled override. 4,418,331., Cl. 340-72.000.
Chlorine Engineers Corp. Ltd.: *See*—
Yamaguchi, Kenzo; Ichisaka, Teruo; Ikegami, Tadao; and Kumagai, Isao, 4,417,970., Cl. 204-257.000.
Choi, Soo-Bong. Device for a portable automatic syringe. 4,417,889., Cl. 604-246.000.
Cholewa, Lothar: *See*—
Aschoff, Hans-Joachim; and Cholewa, Lothar, 4,418,342., Cl. 340-679.000.
Christ, Ferdinand: *See*—
Weber, Otto; Ohnsmann, Klaus; and Christ, Ferdinand, 4,417,630., Cl. 177-1.000.
Christiaens, Leon: *See*—
Welter, Andre; Christiaens, Leon; and Wirtz-Peitz, Ferdinand, 4,418,069., Cl. 424-269.000.
Christner, Larry G.; and Kelley, Dana A., to Energy Research Corporation. Heat treating. 4,417,872., Cl. 432-18.000.
Chugai Ro Kogyo Co., Ltd.: *See*—
Tarumi, Mitio; Tokitsu, Tetsuya; and Matsumoto, Yoshio, 4,417,871., Cl. 432-1.000.
Cianci, James P., to Kendall Company, The. Collection device with antiseptic liquid for body fluids. 4,417,891., Cl. 604-317.000.
Ciba-Geigy Corporation: *See*—
Boger, Manfred; and Ehrenfreund, Josef, 4,418,066., Cl. 424-263.000.
Rohr, Otto; Pissiotas, Georg; Bohner, Beat; and Burdeska, Kurt, 4,417,918., Cl. 71-100.000.
Rohr, Otto, 4,417,919., Cl. 71-124.000.
Schmid, Wolfgang, 4,418,063., Cl. 424-248.540.
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,418,199., Cl. 548-451.000.
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,418,200., Cl. 548-451.000.
CII Honeywell Bull: *See*—
Bourrez, Jean-Marie, 4,418,385., Cl. 364-200.000.
Ciocan, Benjamin. Portable deflector shields. 4,417,741., Cl. 280-154.50R.
CIP, Inc.: *See*—
Li, Shiu Kang L., 4,417,931., Cl. 156-62.200.
Clark Equipment Company: *See*—
Frost, Charles W., 4,417,649., Cl. 192-3.00R.
Clarke, Raymond; and Sandberg, Chester L., to Raychem Corporation. Fiber optic temperature sensing. 4,417,782., Cl. 350-96.290.
Clason, Donald L.; and Schroeck, Calvin W., to Lubrizol Corporation, The. Mixed metal salts/sulfurized phenate compositions and lubricants and functional fluids containing them. 4,417,990., Cl. 252-32.70E.
Claudius Peters AG: *See*—
Krauss, Werner, 4,417,832., Cl. 406-90.000.
Claxton, William B.; and Cromas, Joseph C., to Bendix Corporation, The. Injector valve with contoured valve seat and needle valve interface. 4,417,694., Cl. 239-533.120.
Clough, Peter N.: *See*—
Wolfrum, Jurgen; Kneba, Michael; and Clough, Peter N., 4,417,964., Cl. 204-158.00R.
Coca-Cola Company, The: *See*—
Morgan, Annis R., Jr.; and King, Eddie W., 4,417,450., Cl. 62-126.000.
Cohrs, Heinz L.: *See*—
Hofgen, Gunter; and Cohrs, Heinz L., 4,418,349., Cl. 343-6.50R.
Colgate-Palmolive Company: *See*—
Bauman, Robert A.; and Pierce, Robert C., 4,418,011., Cl. 252-544.000.
Collins, John R.: *See*—
Blackie, Merrick S.; and Collins, John R., 4,418,026., Cl. 264-8.000.
Colt Industries Operating Corp.: *See*—
Kindl, George F.; Michaud, Orean E.; and Brien, Joseph E., 4,417,816., Cl. 356-357.000.
Columbia Chemical Corporation: *See*—
Rosenberg, William E., 4,417,957., Cl. 204-54.00R.
Combustion Engineering, Inc.: *See*—
Cherry, Carl J., 4,417,925., Cl. 106-85.000.
Edwards, Lawrence J.; and Lareau, John P., 4,418,315., Cl. 324-202.000.
Ferrin, Charles R.; and Prestridge, Floyd L., 4,417,971., Cl. 204-305.000.
Yost, Richard J., 4,418,107., Cl. 428-138.000.
Commins, Alfred D.; and Kindelvich, Frederick T., to Zip-Rib, Inc. Clip for retaining sheet metal roofing or siding. 4,417,431., Cl. 52-715.000.
Commissariat a L'Energie Atomique: *See*—
Delapierre, Gilles, 4,418,326., Cl. 338-5.000.
Commonwealth Industrial Gases Limited, The: *See*—
Hancock, Warren J., 4,417,673., Cl. 222-153.000.
Compagnie Industrielle des Telecommunications Cit-Alcatel: *See*—
Le Grand, Yves-Marie, 4,418,245., Cl. 179-2.510.
Connaught, Ruth M.; Coty, Vernon F.; and Sedlak, Michael, to Mobil Oil Corporation. Process for reducing the chemical oxygen demand of spent alkaline reagents. 4,417,986., Cl. 210-759.000.
Conoco Inc.: *See*—
Dodd, John R.; and Ralston, Daniel H., 4,418,005., Cl. 502-217.000.
Gockel, Charles E., 4,417,624., Cl. 166-362.000.
Kulik, Metro D., 4,418,044., Cl. 423-235.000.
Constructors John Brown Limited: *See*—
Shotbolt, Keith, 4,417,830., Cl. 405-169.000.
Container Corporation of America: *See*—
Skaggs, Boyd T., 4,417,684., Cl. 229-15.000.
Continental Group, Inc., The: *See*—
Roth, Donald J.; Kubis, Charles S.; and Walter, John, 4,417,667., Cl. 220-67.000.
Control Data Corporation: *See*—
Tucker, Theodore W., 4,417,770., Cl. 308-3.500.
Cook, Gregory E., to Windpowered Machines Ltd. Wind turbine soft airfoil control system and method. 4,417,853., Cl. 416-132.00B.
Copenhaver, Lloyd F., to Carrier Corporation. Flame rollout condition safety device for a combustion system. 4,417,869., Cl. 431-21.000.
Corain, Luciano, to Nuovo Pignone S.p.A. Weft propelling grippers for textile looms. 4,417,606., Cl. 139-448.000.
Cordier, Georges; and Fouilloux, Pierre, to Rhone-Poulenc Agrochimie. Process for the selective preparation of meta-chloroanilines. 4,418,213., Cl. 564-412.000.
Cordoba-Molina, Jesus F.; Hudgins, Robert R.; and Silveston, Peter L. Method for improving solids removal in clarifiers. 4,417,988., Cl. 210-801.000.
Cornelius, Gerhard; Hilsebein, Wolfgang; Ried, Helmut; and Gessner, Adolf W., to Metallgesellschaft Aktiengesellschaft. Method of producing gasoline hydrocarbons from methanol. 4,418,236., Cl. 585-408.000.
Corning Glass Works: *See*—
Milliman, Bruce A.; and Rodgers, Harris G., Sr., 4,417,513., Cl. 101-41.000.
Pitcher, Wayne H., Jr., 4,417,908., Cl. 55-523.000.
Cosentino, Louis C.; and Martinez, Felix J., to Renal Systems, Inc. Percutaneous implant. 4,417,888., Cl. 604-175.000.
Cosimini, Gregory J.; Lo, David S.; and Paul, Maynard C., to Sperry Corporation. Data track for cross tie wall memory system. 4,418,400., Cl. 365-87.000.
Costabile, Arvid B.: *See*—
Costabile, John J.; Costabile, Arvid B.; and Costabile, Ernest, 4,417,852., Cl. 416-2.000.
Costabile, Ernest: *See*—
Costabile, John J.; Costabile, Arvid B.; and Costabile, Ernest, 4,417,852., Cl. 416-2.000.
Costabile, John J.; Costabile, Arvid B.; and Costabile, Ernest. Marine propeller with replaceable blade sections. 4,417,852., Cl. 416-2.000.
Coster Tecnologie Speciali S.p.A.: *See*—
Giuffredi, Giancarlo, 4,417,674., Cl. 222-402.180.
Cotter, Edmund; Whatley, Francis; and Baum, Heinz W., to Lucas Industries Limited. Disc brakes and friction pad assemblies therefor. 4,417,647., Cl. 188-73.380.
Coty, Vernon F.: *See*—
Connaught, Ruth M.; Coty, Vernon F.; and Sedlak, Michael, 4,417,986., Cl. 210-759.000.
Courtaulds Limited: *See*—
Blackie, Merrick S.; and Collins, John R., 4,418,026., Cl. 264-8.000.
Cousin, Alan J.: *See*—
Bechai, Nabil R.; and Cousin, Alan J., 4,417,583., Cl. 128-660.000.
Couture, Michael V.; and Keklak, Ronald. Pocket key holder. 4,417,612., Cl. 150-40.000.
Cowden, James J.: *See*—
Cave, Eric F.; and Cowden, James J., 4,417,423., Cl. 51-283.00R.
Cowen, Steven J.: *See*—
Gordon, Alan; Watson, Stanley J.; Cowen, Steven J.; Mackelburg, Gerald; and Castile, Brett D., 4,418,404., Cl. 367-132.000.
CPC International Inc.: *See*—
Bohrmann, Hans; Campbell, Thomas; Grigoteit, Werner; and Muller, Gunter, 4,418,090., Cl. 426-578.000.
Cravens, Charles F.: *See*—
McNealy, Richard C.; and Cravens, Charles F., 4,418,258., Cl. 219-10.410.
Crehan, Patrick James: *See*—
Kennedy, Richard B., 4,417,998., Cl. 252-182.000.
Crispin, Brunhart; Voss, Nobert; Pohl, Wulf-Dieter; and Thomaier, Dieter, to Messerschmitt-Bokow-Blohm Gesellschaft mit beschrankter Haftung. Ram jet engine. 4,417,441., Cl. 60-251.000.
Critikon, Inc.: *See*—
Houghton, Richard B.; and Lentz, David J., 4,417,588., Cl. 128-713.000.

Cromas, Joseph C.: *See*—
Claxton, William B.; and Cromas, Joseph C., 4,417,694., Cl. 239-533.120.

Cseh, Gyorgy: *See*—
Toth-Sarudy, Eva; Ambrus, Gabor; Cseh, Gyorgy; Borvendeg, Janos; Moravcsik, Imre; and Mezey, Gabriella, 4,418,205., Cl. 560-39.000.

Cserey, Laszlo; Horvath, Gabor; Szabados, Tamas; Simonkay, Sandor; Sztipanovits, Janos; Vimlati, Pal; Istvan, Zoltan; and Zillich, Pal, to Medicor Muvek. Circuit arrangement for determining the characteristics of liquids and/or gases, in particular the hemoglobin content of the blood. 4,417,812., Cl. 356-40.000.

Cserey, Laszlo; Vimlati, Pal; and Zillich, Pal, to Medicor Muvek. Process and circuit arrangement for the determination in a diluted blood sample of the number of red blood corpuscles, the mean cell volume, the value of haematocrit and other blood parameters. 4,418,313., Cl. 324-71.100.

Cserhalmi, Nicholas B.; and Cappon, Arthur M., to Raytheon Company. Logic gate having a noise immunity circuit. 4,418,292., Cl. 307-443.000.

CTEC Company: *See*—
Quaeck, Manfred W.; and Ross, Douglas, 4,417,634., Cl. 180-22.000.

CTS Corporation: *See*—
Holmes, Curtis L.; Faber, William M., Sr.; Francis, Gaylord L.; and Boykin, Otis F., 4,418,009., Cl. 252-514.000.
Ibrahim, Shawki S.; and Elsner, James E., 4,417,392., Cl. 29-840.000.

Cuevas, Danilo L.; Russo, Frank R.; and Schindler, Francis E., to Engelhard Corporation. Non-burnished precious metal composition. 4,418,099., Cl. 427-229.000.

Culley, Donnell H., Jr. Lumber feeder. 4,417,680., Cl. 226-181.000.

Culver, Norman D., to Braintech, Inc. Apparatus and method for topographic display of multichannel EEG data. 4,417,591., Cl. 128-731.000.

Cundy, Steven L.; Evans, Ronald A.; Johnson, Oliver S.; McCormack, John S.; and Nichols, Bruce A., to Associated Electrical Industries Limited. Manufacture of optical fibre preforms. 4,417,911., Cl. 65-3.120.

Cunningham, Charles L.; and Gwaltney, Robert E., to Hennessy Industries, Inc. Abrasion eliminating tire changing tool. 4,417,614., Cl. 157-1.240.

Cuproquim S.A.: *See*—
Gonzalez, Mario R. R., 4,418,056., Cl. 424-142.000.

Curtis, John R., to Sericol Group Limited. Photopolymerizable materials for use in producing stencils for screen printing. 4,418,138., Cl. 430-253.000.

Cushman, James E.; Plaza, Mario G.; and Waibel, Helmut K., to Durango Systems, Inc. Print drive medium for line/series printers. 4,417,825., Cl. 400-605.000.

Cygnor, John E.; Whitesel, Terry L.; and Mosure, Duane C., to Sundstrand Corporation. Modulated diffuser pump. 4,417,851., Cl. 415-150.000.

Cysewski, Gerry R.; and Anderson, Daniel B., to Battelle Development Corporation. Process for culturing a microalga, and extracting a polysaccharide therefrom. 4,417,415., Cl. 47-1.400.

Czipkschirsch, Kurt; Viertel, Lothar; and Kaiser, Peter, to Gebr. Happich GmbH. Swivel bearing protective housing for automotive sun visor. 4,417,761., Cl. 296-97.00H.

Daftary, Shashikumar H.: *See*—
Streetman, William E.; and Daftary, Shashikumar H., 4,418,176., Cl. 525-57.000.

Dage, Richard C.: *See*—
Schnettler, Richard A.; Dage, Richard C.; and Grisar, J. Martin, 4,418,071., Cl. 424-273.00R.

Dahlitz, Ronald R., to Buffalo Bullet Company. Bullet for muzzle loading guns. 4,417,521., Cl. 102-511.000.

Dahms, Francis A., to Emhart Industries, Inc. Glassware forming apparatus. 4,417,915., Cl. 65-159.000.

Dahn, Raymond C.: *See*—
Escher, Giorgio A.; and Dahn, Raymond C., 4,417,937., Cl. 156-169.000.

Daicel Chemical Industries, Ltd.: *See*—
Kasuga, Takuzo; Toga, Yuzo; Okamoto, Ichiro; and Takahashi, Katsuhiko, 4,418,172., Cl. 524-292.000.

Daigle, Phillip R. Key switch assembly. 4,418,252., Cl. 200-16.00A.

Daikin Kogyo Kabushiki Kaisha: *See*—
Izumo, Masanori; Kametani, Keiichiro; Ota, Sigehito; and Mikami, Kenji, 4,418,046., Cl. 423-245.000.

Dailey, James E.: *See*—
Abbott, Philip A.; Dailey, James E.; Karsan, Demir I.; and Mangiavacchi, Andrea, 4,417,831., Cl. 405-227.000.

Daimler-Benz Aktiengesellschaft: *See*—
Gaus, Hermann; Zaiser, Wolfgang; Pickard, Jurgen; and Eltze, Georg, 4,417,484., Cl. 74-688.000.

Dainippon Screen Seizo Kabushiki Kaisha: *See*—
Ueda, Yoshihiro; Kimura, Yoshikazu; Yonehara, Hiroyuki; and Tanabe, Kenjiro, 4,417,810., Cl. 355-74.000.

Daiwa Can Company: *See*—
Wakamatsu, Atsuyuki; and Tsuwano, Haruo, 4,417,435., Cl. 53-532.000.

Dalke, Arthur E. Carburetor mixture control apparatus. 4,417,562., Cl. 123-592.000.

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Walter, Horst; Ebbinghaus, Werner; and Danckert, Hermann, 4,417,552., Cl. 123-198.00E.

Daniek, Georg, to Cassella Aktiengesellschaft. Process for the manufacture of sulphur which can be recycled. 4,418,014., Cl. 260-125.000.

Danner, Lambert J., to C. Reichert Optische Werke AG. Five-component microscope objective. 4,417,787., Cl. 350-414.000.

Danz, Eckehard; and Krome, Gerd, to BASF Aktiengesellschaft. Removal of impurities from vinyl chloride. 4,418,233., Cl. 570-239.000.

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Brown, Robert J., 4,418,344., Cl. 340-726.000.

Daubert Industries, Inc.: *See*—
Morrow, George W.; and Lambert, Phillip R., 4,418,119., Cl. 428-342.000.

Davies, Roderick D.: *See*—
See, Yee-Chaung; Davies, Roderick D.; and Hartman, Dennis C., 4,418,094., Cl. 427-38.000.

Davis, Earl K.; Landron, Rafael; and Taylor, Scot W., to Motorola, Inc. Lower temperature glass and hermetic seal means and method. 4,417,913., Cl. 65-59.100.

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Larson, Kenneth N.; Davis, John S.; and Bostick, Lewis M., 4,418,382., Cl. 364-200.000.

Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. 8-[3-(6-Fluoro-1,2-benzisoxazol-3-yl)propyl]-1-phenyl-1,3,8-triazaspiro[4.5]dec.5)decan-4-one to treat pain. 4,418,067., Cl. 424-267.000.

Dawson, W. Clifford; Bard, George D.; Smith, Luther W.; and Laurin, Bernard L., to American Optical Corporation. Finished ophthalmic lens comprising an optical smooth coating over a rough-surfaced base. 4,417,790., Cl. 351-166.000.

Dawson, William W., to University of Florida, The. Corneal electrode for electroretinography. 4,417,581., Cl. 128-639.000.

Dayton Superior Corporation: *See*—
Case, James E.; Ruppert, Richard L.; and Manning, Lindley, 4,417,425., Cl. 52-125.500.

Deere & Company: *See*—
Pierrot, Victor C., III; and Ihm, Gerald J., 4,417,759., Cl. 294-86.00R.

De Gaetano, Mario; and Canavesi, Luigi, to Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa SpA. Method for recovering omega-amino-dodecanoic acid from crystallization mother liquors. 4,418,016., Cl. 260-404.000.

DeHart, Damon H. Wall bracket construction. 4,417,712., Cl. 248-225.200.

Deibel, Christopher J.; and Massey, Edward W., to Bliss & Laughlin Industries Incorporated. Tierable and nestable receptacle. 4,417,509., Cl. 99-467.000.

Delapierre, Gilles, to Commissariat a L'Energie Atomique. Measuring device using a strain gauge. 4,418,326., Cl. 338-5.000.

De Marsh, Melvin J. Halide and like light reflector and socket assembly for greenhouse and like use. 4,418,379., Cl. 362-282.000.

Dembeck, Kurt M., to United Technologies Corporation. Containment shell for a fan section of a gas turbine engine. 4,417,848., Cl. 415-121.00G.

Deming, John M.: *See*—
Beestman, George B.; and Deming, John M., 4,417,916., Cl. 71-93.000.

Demke, Kent R.; and Mumola, Joanne L., to International Business Machines Corporation. Displaying a full page representation. 4,418,345., Cl. 340-731.000.

Dennehey, T. Michael; and Peterson, Charles K., to Baxter Travenol Laboratories, Inc. Antibacterial closure. 4,417,890., Cl. 604-256.000.

de Paulis, Tomas: *See*—
Hogberg, Thomas; de Paulis, Tomas; Ross, Svante B.; and Ulff, Carl B. J., 4,418,065., Cl. 424-263.000.

de Pingon, Pierre J. Automatic tool mounting for excavators, loaders, graders and the like. 4,417,844., Cl. 414-723.000.

DePirro, Mario. Pneumatic valve. 4,417,598., Cl. 137-2.000.

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Desbrest, Jean: *See*—
Mena, Andre; Charriere, Jean-Michel; and Desbrest, Jean, 4,417,920., Cl. 75-63.000.

Detrick, Jeffrey C. Wood treating method and apparatus for facilitating removal of ferrous materials therefrom. 4,418,260., Cl. 219-10.430.

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Abt, Anton; Dettelbach, Alfred; and Gresser, Gerhard, 4,417,675., Cl. 222-146.0HE.

Deutschmann, Herbert; and Kamleitner, Ewald, to Motoren-und Turbinen-Union Friedrichshafen GmbH. Fuel injection pump arrangement. 4,417,555., Cl. 123-372.000.

Devanney, Raymond H., to Veeder Industries Inc. Mechanical fuel pump computer conversion mechanism. 4,418,273., Cl. 235-61.00L.

De Vries, Douglas F., to Bear Medical Systems, Inc. Patient adaptor for medical ventilator. 4,417,573., Cl. 128-204.250.

de Winter, Jan G., to Nicolon B.V. Erosion protection mat. 4,417,828., Cl. 405-17.000.

DeWitt, Elmer J., to B. F. Goodrich Company, The. Impact modified polymers of cycloolefins. 4,418,178., Cl. 525-97.000.

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DeYoung, Thomas W.; and Miranda, Hector, to Exxon Research and Engineering Co. Ink jet apparatus with preloaded diaphragm and method of making same. 4,418,355., Cl. 346-140.00R.

Dhein, Rolf; Backer, Lothar; and Schoeps, Jochen, to Bayer Aktiengesellschaft. Process for the preparation of polyesters using mannitol or sorbitol derivatives, mixtures of polyesters and these mannitol or sorbitol derivatives and the use thereof for the production of aqueous stoving lacquers. 4,418,174., Cl. 524-539.000.

Diamond, Julius: *See—*
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Dickens, James A.: *See—*
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Diehl GmbH & Co.: *See—*
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Diemer, Wolfgang: *See—*
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Dierkes, Hermann: *See—*
Grosser, Heinrich; Dierkes, Hermann; Lutke, Hubertus; and Schreckenberg, Klaus, 4,417,499., Cl. 89-36.00K.

Dieterich, Dieter: *See—*
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Dinger, Hans, to Motoren-und Turbinen-Union Friedrichshafen GmbH. Electronically controlled fuel injection timer. 4,417,554., Cl. 123-357.000.

Dinius, Harold B.: *See—*
Nicholson, David W.; Smith, Larry G.; Dinius, Harold B.; and Oberle, Ronald R., 4,417,662., Cl. 209-522.000.

Disctron, Inc.: *See—*
Nalley, Robert E.; and Shenfield, Leonard R., 4,418,368., Cl. 360-78.000.

Dissmeyer, Dean E.; and Mohlman, David F., to General Dynamics, Pomona Division. Firing mechanism for rocket launchers. 4,417,498., Cl. 89-1.814.

Di Tella, Vincenzo; Falbo, Dario; Minardi, Paolo; and Tinebra, Roberto, to Tecnomare S.p.A. Mooring buoy for tanker ships. 4,417,537., Cl. 114-230.000.

Doberschutz, Reiner. Method and apparatus for measuring distances. 4,417,404., Cl. 33-277.000.

Dodd, John R.; and Ralston, Daniel H., to Conoco Inc. Pressure activation of magnesium oxide catalysts. 4,418,005., Cl. 502-217.000.

Dodson, John S.: *See—*
Lawrence, John C.; Stewart, Andrew D. G.; and Dodson, John S., 4,417,564., Cl. 125-30.00R.

Dodson, Stuart A.: *See—*
Douglas, George H.; Diamond, Julius; Studt, William L.; and Dodson, Stuart A., 4,418,209., Cl. 564-27.000.

Doerer, Richard P.; and Karpik, Joseph T., to Van Dresser Corporation. Moldable fibrous mat and method of making the same. 4,418,031., Cl. 264-241.000.

Dolan, Norman E., to Ecodyne Corporation. Cooling tower apparatus. 4,418,023., Cl. 261-109.000.

Doliber, Darrel, to Litton Systems, Inc. Night sight with illuminated aiming point. 4,417,814., Cl. 356-252.000.

Dorn, Ingo H.: *See—*
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Dorner, Rosemarie: *See—*
Smigerski, Rudolf; Dorner, Rosemarie; and Schmidt, Peter, 4,417,983., Cl. 210-527.000.

Dorney, Roger: *See—*
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Dortch, Laurence E. Trailer swivel hitch guide. 4,417,748., Cl. 280-477.000.

Douglas, George H.; Diamond, Julius; Studt, William L.; and Dodson, Stuart A., to William H. Rorer, Inc. Amidinothioureas. 4,418,209., Cl. 564-27.000.

Doura, Fumihiro; Nakabayashi, Masamitsu; and Morimoto, Taiji, to Takeda Chemical Industries, Ltd. Thermosetting adhesive compositions and use. 4,418,177., Cl. 525-57.000.

Dow Chemical Company, The: *See—*
Ezzell, Bobby R.; and Burney, Harry S., Jr., 4,417,961., Cl. 204-98.000.
Ezzell, Bobby R.; Carl, William P.; and Mod, William A., 4,417,969., Cl. 204-252.000.
Johnson, Earl H., 4,418,168., Cl. 524-109.000.
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Williams, Billy M., 4,418,201., Cl. 548-579.000.

Dow Corning Corporation: *See—*
Polmanteer, Keith E.; and Chapman, Harry L., 4,418,165., Cl. 523-210.000.

Doyama, Umeo, to Riccar Company, Ltd. Sewing machine with electronic controlled stitch pattern generator. 4,417,531., Cl. 112-158.00E.

Doyle, Donald E.; Hellwarth, George A.; and Quanstrom, Jack L., to International Business Machines Corporation. Data flow component for processor and microprocessor systems. 4,418,383., Cl. 364-200.000.

Dresser Industries, Inc.: *See—*
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Drevet, Michel; and Trouillet, Jean, to Jeumont Schneider Corporation. Hydrostatic guide bearing of a seat. 4,417,823., Cl. 384-115.000.

Duffy, James P., to Witco Chemical Corporation. Free flowing antistatic composition. 4,417,999., Cl. 252-383.000.

Dulin, Kerry: *See—*
Bernecki, Harry F.; Skuza, Voytech T.; Dulin, Kerry; Sridharan, Sri P.; Zabec, Glenn; and Edgell, James E., 4,417,681., Cl. 227-8.000.

du Manoir de Juaye, Pierre; Guerit, Pierre; Pollet, Gilbert; and Vassiliadis, Marc, to Servimetal. Filtration bloc for liquid metals and alloys, with a mechanical and physical-chemical effect. 4,418,028., Cl. 264-43.000.

Dunn, Donnell L., to J. I. Case Company. Hydraulic system for preventing leak down of hydraulic implements. 4,417,633., Cl. 180-132.000.

Du Pont de Nemours, E. I., and Company: *See—*
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Logullo, Francis M., Sr.; and Wu, Yun-Tai, 4,418,164., Cl. 523-207.000.
Maurin, Louis J., III, 4,418,232., Cl. 570-228.000.
Scott, Paul T., 4,418,116., Cl. 428-288.000.

Durango Systems, Inc.: *See—*
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Durkoppwerke GmbH: *See—*
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Durnev, Valery V., deceased: *See—*
Soloviev, Sergei A.; Fedorov, Svyatoslav N.; Osetsky, Vitaly P.; and Durnev, Valery V., deceased, 4,417,579., Cl. 128-303.00R.

Durneva, Tamara S., administratrix: *See—*
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Durville, Gerard, to Textilma AG. Machine for the production of knitted goods and method of the machine. 4,417,455., Cl. 66-207.000.

Dustbane Products Limited: *See—*
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Dyer, Alan; and Araya, Abraham, to Laporte Industries Limited. Aluminophosphorus compounds. 4,418,048., Cl. 423-305.000.

Dynalectron Corporation: *See—*
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Dynamit Nobel Aktiengesellschaft: *See—*
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Dyson, Lewis L., to Textron Inc. Drive shaft seal. 4,417,881., Cl. 464-150.000.

E. R. Squibb & Sons, Inc.: *See—*
Nakane, Masami; Reid, Joyce; and Haslanger, Martin F., 4,418,076., Cl. 424-285.000.
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Eastman Kodak Company: *See—*
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Zannucci, Joseph S.; and Pruett, Wayne P., 4,418,002., Cl. 252-403.000.

Eaton Corporation: *See—*
Busby, Robert A.; Nat, Gursharan P. S.; and Stearley, John W., 4,418,254., Cl. 200-68.300.
Ferrato, Joseph P., 4,418,102., Cl. 428-1.000.
Kenny, Andrew A., 4,417,599., Cl. 137-85.000.
Mazur, Joseph S., 4,417,636., Cl. 180-68.00R.
Poff, Ronald I., 4,417,477., Cl. 73-766.000.

Eaton-Williams, Raymond H. Multi-electrode boiler. 4,418,269., Cl. 219-295.000.

Ebbinghaus, Werner: *See—*
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Ebentheuer, Hans; and Hirt, Adam, to Robert Bosch GmbH. Magneto-generator for engine ignition systems. 4,418,296., Cl. 310-70.00R.

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Eckert, Robert D.: *See—*
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Ecodyne Corporation: *See—*
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Edebo, Lars B.; Swede, Harald G.; and Tornqvist, Nils-Erik, to Assab Medicin AB. Method for cleaning and disinfecting used plastic Petri dishes. 4,417,926., Cl. 134-17.000.

Edgar, C. Mills, to Solid State Systems, Inc. Bistable switch remotely operable over telephone line. 4,418,244., Cl. 179-2.00A.

Edgell, James E.: *See—*
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Edwards, Lawrence J.; and Lareau, John P., to Combustion Engineering, Inc. Method for effecting a surface examination of coated components. 4,418,315., Cl. 324-202.000.

Edwards, Robert L., to National Seating Co. Reversible transportation seat. 4,417,715., Cl. 248-425.000.

Egami, Kazunari: *See—*
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Egami, Tsuneyuki: *See—*
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Eibich, Peter, to Babcock-BSH Aktiengesellschaft. Arrangement for drying plate-shaped wood products. 4,417,406., Cl. 34-155.000.

Einemann, Richard E., to Xerox Corporation. Sheet registration in a finishing station. 4,417,801., Cl. 355-3.0SH.

Elderton, Peter P., to ITT. Densitometer. 4,417,474., Cl. 73-438.000.

Eldridge, Michael W.: *See—*
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Electrochemical Products, Inc.: *See—*
McCoy, Ewald H., 4,417,956., Cl. 204-44.000.

Elfab Corporation: *See—*
Ammon, J. Preston; Weaver, Harry R.; and Evans, Evan J., 4,417,396., Cl. 29-884.000.

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Nicholson, David W.; Smith, Larry G.; Dinius, Harold B.; and Oberle, Ronald R., 4,417,662., Cl. 209-522.000.

Elliston, Thomas L., to Hydra-Rig, Inc. Traveling block elevator latch assembly. 4,417,846., Cl. 414-745.000.

El-Ramey, Thomas A. Marine anchor with release capability. 4,417,538., Cl. 114-298.000.

Elsel, Werner, to Siemens Aktiengesellschaft. Support structure for transmitting large forces. 4,418,325., Cl. 335-216.000.

Elser, Dieter, to Zahnradfabrik Friedrichshafen, AG. Steering booster system. 4,417,501., Cl. 91-375.00A.

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Eltze, Georg: *See—*
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Emery Industries, Inc.: *See—*
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Emes, Harry R.: *See—*
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Emhart Industries, Inc.: *See—*
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Emi, Toshihiko: *See—*
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Energy Research Corporation: *See—*
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Engelke, Henry C. Can crusher. 4,417,512., Cl. 100-266.000.

Engels, Walter; and Willbanks, Charles E., to Milliken Research Corporation. Water paste extrusion die. 4,417,695., Cl. 239-590.300.

Environmental Research Institute of Michigan: *See—*
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Eppenbach, Lawrence C. Dispenser for flowable material. 4,417,672., Cl. 222-81.000.

Erland, Jonathan; and Dorney, Roger. Process for composite photography. 4,417,791., Cl. 352-45.000.

Ernst Becker & Nadelfabrik Commandit-Gesellschaft: *See—*
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Erwin Sick GmbH Optik-Elektronik: *See—*
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Eryman, William S.: *See—*
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Esaki, Tamemaru: *See—*
Tani, Masami; Esaki, Tamemaru; and Ohno, Yoshikata, 4,418,103., Cl. 428-4.000.

Escher, Giorgio A.; and Dahn, Raymond C., to Atlantic Bridge Company Limited. Fibre reinforced plastic structures and method and apparatus for producing same. 4,417,937., Cl. 156-169.000.

Escher Wyss GmbH: *See—*
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Esser, Fred; Klopper, Detlev; Lachner, Walter; and Kruger, Albrecht, to VEB Edelstahlwerk Freital im VEB Rohrkombinat. Metallurgical plasma melting furnace. 4,418,414., Cl. 373-24.000.

Essex Group, Inc.: *See—*
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Ethyl Corporation: *See—*
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Evans, Evan J.: *See—*
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Evans, Robert M., to RCA Corporation. Tuning system for a multiband television receiver. 4,418,428., Cl. 455-180.000.

Evans, Ronald A.: *See—*
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Evans, Steven, to Eastman Kodak Company. Photographic products and processes employing novel nondiffusible yellow dye-releasing compounds and precursors thereof. 4,418,131., Cl. 430-17.000.

Everling, Bruce W.: *See—*
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Exxon Research and Engineering Co.: *See—*
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Francis, James N.; and Veluswamy, Lavanga R, 4,417,972., Cl. 208-10.000.
Kube, Gebhard K., 4,417,847., Cl. 415-1.000.
McCandlish, Larry E.; and Kugler, Edwin L., 4,418,154., Cl. 518-714.000.
Schucker, Robert C.; and Wheelock, Kenneth S., 4,418,008., Cl. 502-340.000.
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Ezaki, Motoharu: *See—*
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Ezzell, Bobby R.; and Burney, Harry S., Jr., to Dow Chemical Company, The. Membrane cell brine feed. 4,417,961., Cl. 204-98.000.

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F. Ronci Company, Inc.: *See—*
Ronci, Fernando M., 4,417,372., Cl. 24-163.00R.

Faber, William M., Sr.: *See—*
Holmes, Curtis L.; Faber, William M., Sr.; Francis, Gaylord L.; and Boykin, Otis F., 4,418,009., Cl. 252-514.000.

Facet Enterprises, Incorporated: *See—*
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Fackler, John D. Antenna system with directional switching means. 4,418,351., Cl. 343-797.000.

Fairchild Camera and Instrument Corporation: *See—*
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Fairfield Manufacturing Co., Inc.: *See—*
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Falbo, Dario: *See—*
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Familian Corp.: *See—*
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Farber, Heinrich: *See—*
Bauer, Walter; Farber, Heinrich; and Kluge, Reimund, 4,418,420., Cl. 378-187.000.

Favaloro, William E. Respiration monitor for mammals. 4,417,589., Cl. 128-716.000.

Fayter, Richard G., Jr.; and Hall, Allen L., to Emery Industries, Inc. 2-Vinyl- and 2-ethylcyclopropane monocarboxylates. 4,418,202., Cl. 549-496.000.

Fedorov, Svyatoslav N.: *See—*
Soloviev, Sergei A.; Fedorov, Svyatoslav N.; Osetsky, Vitaly P.; and Durnev, Valery V., deceased, 4,417,579., Cl. 128-303.00R.

Fehrle, Martin: *See—*
Rieder, Werner; and Fehrle, Martin, 4,418,122., Cl. 428-480.000.

Fehrm, Bjorn O., to U.S. Philips Corporation. Spreading device. 4,417,709., Cl. 244-136.000.

Feldman, Allan M.: *See—*
Trenbeath, Steven L.; Novak, Robert W.; and Feldman, Allan M., 4,418,047., Cl. 423-265.000.

Felix, Jean-Claude: *See—*
Jacques, Combronde; and Felix, Jean-Claude, 4,417,943., Cl. 156-601.000.

Fennel, John W., Jr.; and Heinz, Miles T., Jr., to International Business Machines Corporation. Encryption using destination addresses in a TDMA satellite communications network. 4,418,425., Cl. 455-27.000.

Fenton, John W. Rotary motor with multilobed rotor and orbiting coupling means. 4,417,862., Cl. 418-54.000.

Ferrato, Joseph P., to Eaton Corporation. Liquid crystal displays having improved hermetic seal. 4,418,102., Cl. 428-1.000.

Ferrin, Charles R.; and Prestridge, Floyd L., to Combustion Engineering, Inc. Circuit for maintaining the strength of an electrostatic field generated in a fluid mixture of varying dielectric strength. 4,417,971., Cl. 204-305.000.

Figler, Bernard A.; and Fingerman, Charles M., to Bell Telephone Laboratories, Incorporated. Apparatus for testing multi-conductor cables. 4,418,312., Cl. 324-52.000.

Finet, Alain; and Nerone, Louis R., to Stock Equipment Company. Product-to-frequency converter. 4,418,389., Cl. 364-478.000.

Fingerman, Charles M.: *See—*
Figler, Bernard A.; and Fingerman, Charles M., 4,418,312., Cl. 324-52.000.

Finike Italiana Marposs S.p.A.: *See—*
Dall'Aglio, Carlo, 4,417,400., Cl. 33-172.00E.

Finney, Jean R., to Memorial University of Newfoundland. Package for the transportation of nematodes. 4,417,545., Cl. 119-1.000.

Finnieston, Alan. Lower arm brace. 4,417,570., Cl. 128-87.00R.

Firestone Tire & Rubber Company, The: *See*—
Bohm, Georg G. A.; Vescelius, Lee E.; and Hamed, Gary R., 4,418,167., Cl. 524-68.000.

Firth, Bruce E., to UOP Inc. Preparation of 2,4,6-trialkylphenols. 4,418,223., Cl. 568-794.000.

Fischer, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Rotary printing machine system. 4,417,516., Cl. 101-181.000.

Fischer & Porter Company: *See*—
Schmoock, Roy F.; and Shauger, Herbert A., 4,417,479., Cl. 73-861.160.

Fixler, Jon S., to Genin, Robert. Acoustic projection stereophonic system. 4,418,243., Cl. 381-24.000.

Flanagan, Joseph E., to Rockwell International Corporation. Electrophilic solid propellant gas generator. 4,417,930., Cl. 149-19.900.

Flippo, Frans A.: *See*—
Muetgeert, Johannes; Otto, Petrus H. L.; and Flippo, Frans A., 4,418,147., Cl. 435-178.000.

Floros, Constantinos. Liquid driven rotary brush with liquid soap feeder. 4,417,826., Cl. 401-41.000.

FMC Corporation: *See*—
Brown, Richard A.; Byers, Lance R.; and Norris, Robert D., 4,418,051., Cl. 423-592.000.

Fohl, Artur, to Repa Feinstanzwerk GmbH. Automatic roll-up device for a safety belt. 4,417,702., Cl. 242-107.200.

Fontenot, Delouis J., to Phillips Petroleum Company. Degassing method and apparatus. 4,417,907., Cl. 55-38.000.

Forand, Ronald R.; and Menz, Edward T., Jr., to Rohm and Haas Company. Assay process with non-boiling denaturation. 4,418,151., Cl. 436-505.000.

Forbes, Hampton E., Jr., to Westvaco Corporation. Shipping and display carton. 4,417,655., Cl. 206-45.250.

Forbes II, Richard L., to Xerox Corporation. Particle dispenser. 4,417,802., Cl. 355-3.0DD.

Ford Motor Company: *See*—
Chattha, Mohinder S., 4,418,182., Cl. 525-438.000.

Forton, Henri M. F. J.: *See*—
Viellefont, Jean F.; and Forton, Henri M. F. J., 4,417,953., Cl. 204-12.000.

Fouilloux, Pierre: *See*—
Cordier, Georges; and Fouilloux, Pierre, 4,418,213., Cl. 564-412.000.

Foulletier, Louis, to PCUK Produits Chimiques Ugine Kuhlmann. Catalysts for gaseous phase fluorination of aliphatic chlorinated and chlorofluorinated derivatives. 4,418,004., Cl. 502-182.000.

Francis, Gaylord L.: *See*—
Holmes, Curtis L.; Faber, William M., Sr.; Francis, Gaylord L.; and Boykin, Otis F., 4,418,009., Cl. 252-514.000.

Francis, James N.; and Veluswamy, Lavanga R, to Exxon Research and Engineering Co. Recovery of coal liquefaction catalysts. 4,417,972., Cl. 208-10.000.

Frank, Eugene O. Intake air booster for an internal combustion engine. 4,417,560., Cl. 123-559.000.

Frank, Ulrich A. Liquid monitor. 4,417,585., Cl. 128-668.000.

Franke, Alwis: *See*—
Arnason, Tomas; Franke, Alwis; and Tschopp, Theodor, 4,417,958., Cl. 204-67.000.

Frankhouser, Paul L.; and Shevde, Ketan, to Arrow International, Inc. Catheter introduction set. 4,417,886., Cl. 604-53.000.

Franklin Institute, The: *See*—
Pytlewski, Louis L.; Iaconianni, Frank J.; Krevitz, Kenneth; and Smith, Arthur B., 4,417,977., Cl. 208-262.000.

Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H.: *See*—
Theurer, Josef; and Bock, Gernot, 4,417,522., Cl. 104-7.00B.

Frederick Electronics Corporation: *See*—
Swagerty, Arnold; and Mitchell, William A., 4,418,318., Cl. 328-155.000.

Freedom, John. Indicia means for keys. 4,417,410., Cl. 40-330.000.

Frentzel, Richard L., to Celotex Corporation, The. Polyoxyalkylene/unsaturated diester reaction product for cellular foam stabilization. 4,418,158., Cl. 521-115.000.

Fricke, Richard J.: *See*—
Kennedy, Richard B., 4,417,998., Cl. 252-182.000.

Friedrich Grohe Armaturenfabrik GmbH & Co.: *See*—
Bernat, Georg, 4,417,933., Cl. 156-64.000.

Fritz Eichenauer GmbH & Co. KG: *See*—
Roller, Hanno; and Nauerth, Karl-Heinz, 4,418,272., Cl. 219-541.000.

Fritz Schafer Gesellschaft mit beschrankter Haftung: *See*—
Schafer, Gerhard, 4,417,541., Cl. 118-326.000.

Frost, Charles W., to Clark Equipment Company. Arrangement for the brake system of a hydrostatic loader including a valve port block. 4,417,649., Cl. 192-3.00R.

Fuji Electric Co., Ltd.: *See*—
Kawasaki, Kikuo; Yoshida, Kazuo; Nonoyama, Nobuo; Yamaguchi, Toshibumi; Hasegawa, Toshio; and Okamura, Jitsuo, 4,417,671., Cl. 222-56.000.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Kageyama, Hayashi, 4,417,641., Cl. 180-247.000.

Fuji Photo Film Co., Ltd.: *See*—
Katsuyama, Harumi; and Shishido, Tadao, 4,418,037., Cl. 422-56.000.
Kawaguchi, Hideo; and Inayama, Takayuki, 4,418,141., Cl. 430-530.000.
Kogane, Mikio, 4,417,808., Cl. 355-29.000.
Mifune, Hiroyuki; Ishiguro, Shoji; Shishido, Tadao; and Nishimura, Tatsuo, 4,418,140., Cl. 430-351.000.
Oishi, Kengo; and Suzuki, Osamu, 4,417,704., Cl. 242-197.000.

Fuji Terumo Co., Ltd.: *See*—
Koshi, Isei, 4,417,887., Cl. 604-162.000.

Fujida, Mamoru: *See*—
Osuga, Minoru; Oyama, Yoshishige; and Fujida, Mamoru, 4,417,558., Cl. 123-489.000.

Fujii, Etsuo: *See*—
Satoh, Makoto; Miyakawa, Yoshitaka; Fujii, Etsuo; and Matsuda, Shohei, 4,417,768., Cl. 303-113.000.

Fujii, Setsuro; Sugimoto, Mamoru; and Yaegashi, Takashi, to Torii & Co. Ltd. Leucylalany-arginine derivative. 4,418,012., Cl. 260-112.50R.

Fujii, Toshinobu, to Meidensha Electric Mfg. Co., Ltd. Metal-bromine secondary battery. 4,418,128., Cl. 429-70.000.

Fujimori, Tohru; and Kusui, Yoshino, to Sony Corporation. Tape cassette. 4,418,373., Cl. 360-132.000.

Fujimoto, Hideaki: *See*—
Kitamura, Minoru; Koyama, Shinji; Ito, Shuzo; Ohgami, Masahiko; Matsui, Hideo; Hirose, Isamu; Fujimoto, Hideaki; and Yasui, Tsuyoshi, 4,417,723., Cl. 266-265.000.

Fujimoto, Tadao; Fujiuchi, Hiroyuki; Shimizu, Kenichi; and Ueda, Seiichiro, to Kubota Ltd. Method for melting and treating waste. 4,417,529., Cl. 110-346.000.

Fujitsu Limited: *See*—
Kouno, Tsutom, 4,418,242., Cl. 178-19.000.
Sakurai, Junji, 4,418,399., Cl. 365-51.000.

Fujiuchi, Hiroyuki: *See*—
Fujimoto, Tadao; Fujiuchi, Hiroyuki; Shimizu, Kenichi; and Ueda, Seiichiro, 4,417,529., Cl. 110-346.000.

Fujiwara, Kenzou, to Mitsubishi Denki Kabushiki Kaisha. Insulated coil. 4,418,241., Cl. 174-121.0SR.

Fukatsu, Shunzo: *See*—
Okonogi, Tsuneo; Fukatsu, Shunzo; Hachisu, Mitsugu; Kawashima, Hiroko; Shitoh, Keiko; and Sekizawa, Yasuharu, 4,418,070., Cl. 424-270.000.

Fukuda, Akihiro: *See*—
Akagi, Kazuo; Fukuda, Akihiro; and Saito, Tomio, 4,417,421., Cl. 51-16.000.

Fukuoka Kagaku Kogyo: *See*—
Fukuoka, Sadao, 4,417,407., Cl. 36-3.00B.

Fukuoka, Sadao, to Fukuoka Kagaku Kogyo. Footwear. 4,417,407., Cl. 36-3.00B.

Fuller, John F., Jr., to H. J. Heinz Company. Article of manufacture and process. 4,417,405., Cl. 34-39.000.

Fullman, Robert L., to General Electric Company. Steel nitriding method and apparatus. 4,417,927., Cl. 148-16.600.

Furukawa Electric Co., Ltd.: *See*—
Sakurai, Yoshimi; Furukawa, Yoshimi; Kanai, Masaaki; and Osada, Yasufumi, 4,417,775., Cl. 339-5.00M.

Furukawa, Yoshimi: *See*—
Sakurai, Yoshimi; Furukawa, Yoshimi; Kanai, Masaaki; and Osada, Yasufumi, 4,417,775., Cl. 339-5.00M.

Furuta, Youichi, to Aisin Seiki Kabushiki Kaisha. Brake master cylinder with attached brake booster. 4,417,445., Cl. 60-554.000.

Furutsu, Akira, to Japan Bano'k Co., Ltd.; and Ben Clements & Sons, Inc. Tag attaching machine. 4,417,682., Cl. 227-67.000.

Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, to Robert Bosch GmbH. Fuel injection valve for an internal combustion engine. 4,417,693., Cl. 239-453.000.

G.N. Plastics Company Limited: *See*—
Nemeskeri, Georg, 4,418,034., Cl. 264-522.000.

G. Siempelkamp GmbH & Co.: *See*—
Sitzler, Hans-Dietrich, 4,417,866., Cl. 425-364.00R.

Gafcel Industries, Inc.: *See*—
Gaffney, William, 4,417,936., Cl. 156-145.000.

Gaffney, William, to Gafcel Industries, Inc. Plastic web with multiplicity of gas filled bubbles, containing printing thereon and method of making same. 4,417,936., Cl. 156-145.000.

Gale, Michael T.: *See*—
Knop, Karl H.; and Gale, Michael T., 4,417,784., Cl. 350-162.190.

GAO Gesellschaft fur Automation und Organisation mbH: *See*—
Hoppe, Joachim; and Haghiri-Tehrani, Yahya, 4,417,413., Cl. 40-630.000.

Gardner, Donald E.; and Smith, David T., to Surgicot, Inc. Self-sealing sterilization bag. 4,417,658., Cl. 206-438.000.

Garel, Yves. Self orientable vehicle propelled by a system of pedals actuating a chain. 4,417,743., Cl. 280-266.000.

Garrone, Franco, to Sasib S.p.A. Apparatus forming a continuous cut tobacco braid in a cigarette making machine. 4,417,594., Cl. 131-110.000.

Gauch, Hermann; and von Hagen, Wolf R., to Union Special G.m.b.H. Lubricant sensing device for sewing machines. 4,417,534., Cl. 112-256.000.

Gaus, Hermann; Zaiser, Wolfgang; Pickard, Jurgen; and Eltze, Georg, to Daimler-Benz Aktiengesellschaft. Planetary change-speed transmission for automotive vehicles. 4,417,484., Cl. 74-688.000.

Gausepohl, Hermann: *See*—
Heinz, Gerhard; Schmitt, Burghard; Dorn, Ingo H.; Gausepohl, Hermann; Gerberding, Karl; Jung, Rudolf H.; Mittnacht, Hans; Pohrt, Jurgen; and Witimer, Paul, 4,418,180., Cl. 525-314.000.

Gauthier, Andre; and Morand, Jean C. F., to Societe Anonyme de Telecommunications. Process for preparing layers of $Hg_{1-x}Cd_xTe$. 4,418,096., Cl. 427-76.000.

Gebr. Happich GmbH: *See*—
Cziptschirsch, Kurt; Viertel, Lothar; and Kaiser, Peter, 4,417,761., Cl. 296-97.00H.

Gehweiler, William F.: *See*—
Heagerty, William F.; Caracciolo, Gerald T.; and Gehweiler, William F., 4,418,402., Cl. 365-156.000.

Geisthoff, Hubert, to Jean Walterscheid GmbH. Safety clutch. 4,417,650., Cl. 192-56.00R.

Genahr, Rudolf, to Cerberus AG. Infrared intrusion detector with pyroelectric sensor and charge amplifier. 4,418,335., Cl. 340-565.000.

General Dynamics Corporation/Convair Div.: *See*—
Bartholomew, Bruce J., 4,417,813., Cl. 356-349.000.

General Dynamics, Pomona Division: *See*—
Dissmeyer, Dean E.; and Mohlman, David F., 4,417,498., Cl. 89-1.814.
Hulderman, Garry N., 4,418,430., Cl. 455-328.000.
Maudal, Inge, 4,417,520., Cl. 102-489.000.

General Electric Company: *See*—
Anderson, Brenda L.; and Boyd, Ronald J., 4,417,648., Cl. 188-119.000.
Becker, Charles A., 4,417,393., Cl. 29-846.000.
Bennett, James G.; and Tungate, Freddie L., 4,418,224., Cl. 568-804.000.
Bose, Bimal K., 4,418,308., Cl. 318-803.000.
Fullman, Robert L., 4,417,927., Cl. 148-16.600.
Griffith, Robert J., 4,418,301., Cl. 318-59.000.
Hetzel, Frederick; and McCracken, William G., Jr., 4,418,328., Cl. 338-20.000.
Hornung, Richard E., 4,418,398., Cl. 364-900.000.
Jackson, Melvin R.; and Rairden, John R., III, 4,418,124., Cl. 428-548.000.
Knowlton, William K., 4,417,476., Cl. 73-660.000.
Levy, Samuel, 4,417,525., Cl. 105-166.000.
Modic, Frank J., 4,418,157., Cl. 521-82.000.
Ohno, John M., 4,417,906., Cl. 51-307.000.
Prochazka, Svante; and Klug, Frederic J., 4,418,024., Cl. 264-1.200.
Prochazka, Svante; and Klug, Frederic J., 4,418,025., Cl. 264-1.200.
Roberts, Clayton R., 4,418,429., Cl. 455-327.000.
Temple, Victor A. K., 4,417,385., Cl. 29-571.000.

General Foods Corporation: *See*—
Marino, Richard P.; Rothamel, Richard J.; and Rieken, William C., 4,418,086., Cl. 426-302.000.

General Foods, Inc.: *See*—
Cameron, Jacquelyn J.; and Myers, Chester D., 4,418,013., Cl. 260-123.500.
Murray, Edward D.; Woodman, Brenda J.; Maurice, Terrence J.; and Sirett, Robert R., 4,418,084., Cl. 426-250.000.

General Mining Union Corporation, Limited: *See*—
Bohme, Rolf C.; van Zyl, Ian D.; and Lazerson, Max M., 4,417,817., Cl. 356-380.000.

General Motors Corporation: *See*—
Burry, Donald L., 4,417,750., Cl. 280-753.000.
McCartney, Charles P., Jr.; and Wheadon, Ellis G., 4,417,608., Cl. 141-1.100.

Genese, Joseph N.; and Muetterties, Andrew J., to Abbott Laboratories. Gravitational flow system for the sequential administration of medical liquids. 4,417,577., Cl. 604-81.000.

Genin, Robert: *See*—
Fixler, Jon S., 4,418,243., Cl. 381-24.000.

Gentry, Samuel, to Green, Paul W.; and Green, Wayne R., part interest to each. Telescoping nut driver. 4,417,488., Cl. 81-185.000.

Geo. A. Hormel & Company: *See*—
Leining, Lyndon R., 4,417,367., Cl. 17-21.000.

Georgetown University: *See*—
Ledley, Robert S., 4,417,967., Cl. 204-180.00G.

Gerath, Francis C.: *See*—
Rosenbeck, William H.; Eckart, Frederick; and Gerath, Francis C., 4,418,266., Cl. 219-137.00R.

Gerberding, Karl: *See*—
Heinz, Gerhard; Schmitt, Burghard; Dorn, Ingo H.; Gausepohl, Hermann; Gerberding, Karl; Jung, Rudolf H.; Mittnacht, Hans; Pohrt, Jurgen; and Witimer, Paul, 4,418,180., Cl. 525-314.000.

Gergely, Gerhard. Cleansing tablets for tooth prostheses. 4,417,993., Cl. 252-90.000.

Gerhart, Fritz: *See*—
Bey, Philippe; Gerhart, Fritz; Jung, Michel; and Schirlin, Daniel, 4,418,077., Cl. 424-309.000.

Gessner, Adolf W.: *See*—
Cornelius, Gerhard; Hilsebein, Wolfgang; Ried, Helmut; and Gessner, Adolf W., 4,418,236., Cl. 585-408.000.

Gessner, Richard W. Earth boring apparatus. 4,417,628., Cl. 173-29.000.

Gibbons, Ambrose J., Jr.; and Ringwood, Robert C., Jr., to M & T Chemicals Inc. Stabilized pvc resins. 4,418,169., Cl. 524-178.000.

Gill, Frederick H.: *See*—
Johnston, Harold; Lask, Zygmunt; and Gill, Frederick H., 4,417,781., Cl. 339-198.00J.

Gittleman, Morris, to Familian Corp. Pipe coupling. 4,417,755., Cl. 285-373.000.

Giuffredi, Giancarlo, to Coster Tecnologie Speciali S.p.A. Valve for the admixture of fluids and delivery of the resulting mixture. 4,417,674., Cl. 222-402.180.

Gjertsen, Robert K.; Tower, Stephen N.; and Huckestein, Edgar A., to Westinghouse Electric Corp. Fuel assembly for a nuclear reactor. 4,418,036., Cl. 376-438.000.

Glaenzer Spicer: *See*—
Guimbretiere, Pierre, 4,417,643., Cl. 180-254.000.

Glas, Cor, to Centrale Veevoederfabriek "Sloten". Process for preparing a dry, powdery milk product. 4,418,091., Cl. 426-580.000.

Glasgow, John A., to Marconi Company Limited, The. Image processing. 4,418,360., Cl. 358-108.000.

Glass, D. Roger: *See*—
Pehlke, Robert D.; Glass, D. Roger; Johnson, Lyle J., deceased; and Johnson, Evelyn, administratrix, 4,417,721., Cl. 266-225.000.

Gockel, Charles E., to Conoco Inc. Method and apparatus for controlling the flow of fluids from an open well bore. 4,417,624., Cl. 166-362.000.

Goebel, Franz, to GTE Products Corporation. Electrochemical cell. 4,418,129., Cl. 429-91.000.

Goellner, Robert F., to Manufacturers Supplies Co. Pattern matrix for skiving shoe parts. 4,417,458., Cl. 69-13.000.

Goetze, Volkmar; and Schuett, Dieter, to International Business Machines Corporation. Error detection and correction apparatus for a logic array. 4,418,410., Cl. 371-15.000.

Gomberg, Edward N.; and Wright, James O. B., to Synair Corporation. Method for distributing material inside a tire casing. 4,418,093., Cl. 427-8.000.

Gonzalez, Mario R. R., to Cuproquim S.A. Process for making cupric hydroxide. 4,418,056., Cl. 424-142.000.

Goode, Keith F., to Ingersoll Milling Machine Company, The. Machine tool head having rotating spindle. 4,417,379., Cl. 29-35.500.

Goodman System Company, Inc.: *See*—
Goodman, Toronta P.; and Everling, Bruce W., 4,417,547., Cl. 123-25.00J.

Goodman, Toronta P.; and Everling, Bruce W., to Goodman System Company, Inc. Engine speed and engine load responsive fluid injection system for an internal combustion engine. 4,417,547., Cl. 123-25.00J.

Goodyear Tire & Rubber Company, The: *See*—
Smith, Richard R.; and Kelley, Mellis M., 4,418,188., Cl. 528-274.000.
Throckmorton, Morford C.; and Sandstrom, Paul H., 4,418,185., Cl. 526-201.000.

Gordon, Alan; Watson, Stanley J.; Cowen, Steven J.; Mackelburg, Gerald; and Castile, Brett D., to United States of America, Navy. Single-sideband acoustic telemetry. 4,418,404., Cl. 367-132.000.

Gordon, John C., to Nautilus Crane & Equipment Corporation. Method and apparatus for mounting lift crane on offshore structures. 4,417,664., Cl. 212-192.000.

Gordon, Marc J.; and Ruff, Stanley, to RGG, Inc. Web dispenser. 4,417,495., Cl. 83-175.000.

Graber, Warren S.: *See*—
Brantingham, George L.; and Graber, Warren S., 4,418,397., Cl. 364-900.000.

Graf, Rudolf, to Sprecher & Schuh AG. Electrically insulating plastic element for an electrical switching device, especially for use as the blast nozzle of a gas-blast switch. 4,418,256., Cl. 200-148.00R.

Grandmenil, Gaston. Scraper arm. 4,417,652., Cl. 198-511.000.

Granger, Robert L.; and Alexander, Alva P., Jr., to United States Gypsum Company. Apparatus for creasing paper used in the production of gypsum wallboard. 4,417,883., Cl. 493-403.000.

Grant, Willie T. Multi-blade automatic air register damper. 4,417,687., Cl. 236-9.00A.

Green, David L.: *See*—
Green, Frank H., 4,417,572., Cl. 128-134.000.

Green, Frank H., to Green, David L., a part interest. Restrained patient excessive movement indicating safety device. 4,417,572., Cl. 128-134.000.

Green, Harold A.; Merianos, John J.; and Petrocci, Alfonso N., to Millmaster Onyx Group, Inc. Polymeric quaternary ammonium compounds for skin care. 4,418,054., Cl. 424-70.000.

Green, Paul W.: *See*—
Gentry, Samuel, 4,417,488., Cl. 81-185.000.

Green, Wayne R.: *See*—
Gentry, Samuel, 4,417,488., Cl. 81-185.000.

Green, William P.: *See*—
Hattan, Mark, 4,417,402., Cl. 33-199.00R.

Greschner, Johann: *See*—
Bohlen, Harald; Engelke, Helmut; Greschner, Johann; and Nehmiz, Peter, 4,417,946., Cl. 156-643.000.

Gresser, Gerhard: *See*—
Abt, Anton; Dettelbach, Alfred; and Gresser, Gerhard, 4,417,675., Cl. 222-146.0HE.

Grey, Roger A.: *See*—
Pez, Guido P.; and Grey, Roger A., 4,418,227., Cl. 568-861.000.

Griffith, Robert J., to General Electric Company. Circuit for averaging a plurality of separate motor speed signals. 4,418,301., Cl. 318-59.000.

Grigoleit Company, The: *See*—
Howie, Robert K., Jr., 4,417,483., Cl. 74-553.000.

Grigoteit, Werner: *See*—
Bohrmann, Hans; Campbell, Thomas; Grigoteit, Werner; and Muller, Gunter, 4,418,090., Cl. 426-578.000.

Grisar, J. Martin: *See*—
Schnettler, Richard A.; Dage, Richard C.; and Grisar, J. Martin, 4,418,071., Cl. 424-273.00R.

Groat, Dennis E.; Sell, Richard W.; Kalish, Richard J.; and Melton, Horace E., to Scherer Laboratories, Inc. Method of forming stable dental gel of stannous fluoride. 4,418,057., Cl. 424-151.000.

Grosser, Heinrich; Dierkes, Hermann; Lutke, Hubertus; and Schreckenberg, Klaus, to Thyssen Industrie Aktiengesellschaft. Weapon mount for armored vehicle. 4,417,499., Cl. 89-36.00K.

Grumman Aerospace Corporation: *See*—
Negri, Rosario O., 4,417,708., Cl. 244-45.00R.

Gruner, Heiko, to Robert Bosch GmbH. Fast-response temperature sensor. 4,418,329., Cl. 338-28.000.

Grunert, Margarete: *See*—
Schmid, Karl; Grunert, Margarete; Heidrich, Jochen; and Tesmann, Holger, 4,418,217., Cl. 568-593.000.

GTE Laboratories Incorporated: *See*—
Palilla, Frank C.; MacAllister, Burton W., Jr.; and McKenna, John F., 4,418,327., Cl. 338-309.000.

GTE Prods. Corp.: *See*—
Palilla, Frank C.; MacAllister, Burton W., Jr.; and McKenna, John F., 4,418,327., Cl. 338-309.000.

GTE Products Corporation: *See*—
Goebel, Franz, 4,418,129., Cl. 429-91.000.

Guardian Products Company, Inc.: *See*—
Smith, Alfred A., 4,417,361., Cl. 4-577.000.

Guerit, Pierre: *See*—
du Manoir de Juaye, Pierre; Guerit, Pierre; Pollet, Gilbert; and Vassiliadis, Marc, 4,418,028., Cl. 264-43.000.

Guill, Andrew J. Electrical construction game. 4,417,732., Cl. 273-238.000.

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Johnson, Clifton E., 4,417,416., Cl. 37-2.00R.

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Kramer, Wolfgang; Buchel, Karl H.; Haller, Ingo; and Plempel, Manfred, 4,418,072., Cl. 424-273.00R.

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Ohkura, Zenichi; and Haneishi, Yasuyuki, 4,417,798., Cl. 354-271.000.

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Hardy, Derek J.; and Eldridge, Michael W., to British Hovercraft Corporation Ltd. Air cushion vehicle. 4,417,637., Cl. 180-116.000.

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Andersen, Harold W.; Andersen, Shirley R.; Zaner, Clifford; and Harrison, Charles H., 4,418,055., Cl. 424-126.000.

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Hata, Yoogo, to Tokyo Shibaura Denki Kabushiki Kaisha. Measuring device. 4,418,392., Cl. 364-571.000.

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Kopecky, Ivyl D., 4,417,530., Cl. 111-73.000.

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Doyle, Donald E.; Hellwarth, George A.; and Quanstrom, Jack L., 4,418,383., Cl. 364-200.000.

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Keil, Erich H., 4,418,032., Cl. 264-289.600.
Klose, Werner; and Auel, Theodor, 4,418,019., Cl. 260-502.50C.
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Ober, John W., 4,418,375., Cl. 361-253.000.
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Elliston, Thomas L., 4,417,846., Cl. 414-745.000.
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Chadwick, James B., 4,417,841., Cl. 414-346.000.
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Ihm, Gerald J.: *See*—
Pierrot, Victor C., III; and Ihm, Gerald J., 4,417,759., Cl. 294-86.00R.
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Camras, Marvin, 4,418,365., Cl. 358-342.000.
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Jennings, James R.; and Pessimisis, George N., 4,417,997., Cl. 252-182.000.
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Murray, Robert T.; and Bradley, Daniel J., 4,417,815., Cl. 356-349.000.
Imperial Group plc: *See*—
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Muhler, Joseph C.; and Putt, Mark S., 4,418,053., Cl. 424-52.000.
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Goode, Keith F., 4,417,379., Cl. 29-35.500.
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Inoue-Japax Research Incorporated: *See*—
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Inskip, Michael; and Warren, Alan, to TI Russell Hobbs Limited. Electric liquid heating appliance. 4,418,270., Cl. 219-328.000.
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Hansen, Arne, 4,417,626., Cl. 169-37.000.
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Barclay, Donald J.; and Morgan, William M., 4,417,955., Cl. 204-43.00R.
Bohlen, Harald; Engelke, Helmut; Greschner, Johann; and Nehmiz, Peter, 4,417,946., Cl. 156-643.000.
Deinke, Kent R.; and Mumola, Joanne L., 4,418,345., Cl. 340-731.000.
Doyle, Donald E.; Hellwarth, George A.; and Quanstrom, Jack L., 4,418,383., Cl. 364-200.000.
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Goetze, Volkmar; and Schuett, Dieter, 4,418,410., Cl. 371-15.000.
Jacques, Combronde; and Felix, Jean-Claude, 4,417,943., Cl. 156-601.000.
Mayne-Banton, Veronica I.; and Srinivasan, Rangaswamy, 4,417,948., Cl. 156-643.000.
Paterson, Robert L.; and Sublette, Jerry M., 4,417,824., Cl. 400-477.000.
Queen, Larry C., 4,418,409., Cl. 370-104.000.
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Pittet, Alan O.; Muralidhara, Ranya; and Hagedorn, Myrna L., 4,418,087., Cl. 426-536.000.
Sprecker, Mark A.; and Hall, John B., 4,418,010., Cl. 252-522.00R.
International Minerals & Chemical Corp.: *See*—
Jacobs, Martin J., 4,418,226., Cl. 568-854.000.
International Paper Company: *See*—
Wozniacki, Roger M., 4,417,686., Cl. 229-52.00B.
International Paper Compay: *See*—
Mehra-Palta, Asha, 4,417,417., Cl. 47-58.000.
International Power Technology, Inc.: *See*—
Cheng, Dah Y., 4,417,438., Cl. 60-39.050.
International Standard Electric Corporation: *See*—
Hansen, Kaj B., 4,418,247., Cl. 179-115.50R.
Hemdal, Goran A. H.; and Jager, Jonny S., 4,418,396., Cl. 364-900.000.
Hofgen, Gunter; and Cohrs, Heinz L., 4,418,349., Cl. 343-6.50R.
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Stapleton, John J., 4,418,359., Cl. 358-65.000.
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Harrison, Anthony P., 4,417,987., Cl. 210-759.000.
Irie, Tsunemasa: *See*—
Kojima, Atsuyuki; Irie, Tsunemasa; Harada, Shuichi; Kameso, Yoshito; Katsube, Junki; and Yamamoto, Hisao, 4,418,079., Cl. 424-330.000.
Irvin, Howard B., to Phillips Petroleum Company. Solvent purification. 4,418,191., Cl. 528-500.000.
Irwin, Rodney C., to Koppers Company, Inc. Apparatus for cleaning coke oven doors. 4,417,952., Cl. 202-241.000.
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Wertheimer, Seev, 4,417,833., Cl. 407-61.000.
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Ishikura, Tomoyuki: *See*—
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Ishioka, Yozo: *See*—
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Rieder, Werner; and Fehrle, Martin, 4,418,122., Cl. 428-480.000.
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Cserey, Laszlo; Horvath, Gabor; Szabados, Tamas; Simonkay, Sandor; Sztipanovits, Janos; Vimlati, Pal; Istvan, Zoltan; and Zillich, Pal, 4,417,812., Cl. 356-40.000.
Ito, Chiharu: *See*—
Kawashima, Sadao; and Ito, Chiharu, 4,418,113., Cl. 428-213.000.
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Kobayashi, Akihiro; Kida, Masashi; Ito, Novuei; and Kato, Yoji, 4,417,550., Cl. 123-145.00A.
Ito, Shuzo: *See*—
Kitamura, Minoru; Koyama, Shinji; Ito, Shuzo; Ohgami, Masahiko; Matsui, Hideo; Hirose, Isamu; Fujimoto, Hideaki; and Yasui, Tsuyoshi, 4,417,723., Cl. 266-265.000.
Ito, Toshio: *See*—
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Itoh, Hiroshi: *See*—
Ohkawa, Nobushisa; and Itoh, Hiroshi, 4,417,553., Cl. 123-339.000.
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Elderton, Peter P., 4,417,474., Cl. 73-438.000.
Iwai, Hiroshi, to Victor Company of Japan, Ltd. Circuit for controlling rotation of motor. 4,418,304., Cl. 318-311.000.
Iwase, Yoshinobu: *See*—
Kumagai, Tadanobu; and Iwase, Yoshinobu, 4,417,880., Cl. 464-111.000.
Iyer, Sankar P.; Lewis, Roy D.; Klein, H. Joseph; Hord, William C.; and Ailor, James C., to Cabot Corporation. Apparatus for vacuum casting of rods. 4,417,617., Cl. 164-254.000.
Izumi, Shinichi, to Tokico Ltd. Cylinder device. 4,417,503., Cl. 92-240.000.
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J. I. Case Company: *See*—
Dunn, Donnell L., 4,417,633., Cl. 180-132.000.
Wirsbinski, James L., 4,417,765., Cl. 298-5.000.
Jackson, Melvin R.; and Rairden, John R., III, to General Electric Company. Plasma spray-cast components. 4,418,124., Cl. 428-548.000.
Jacobs, Martin J., to International Minerals & Chemical Corp. Process for refining waste liquor. 4,418,226., Cl. 568-854.000.
Jacobson, Darwin J. Segmented extendible boom. 4,417,424., Cl. 52-108.000.
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silicon rods pulled according to the Czochralski technique. 4,417,943., Cl. 156-601.000.

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Schreiner, Kurt; and Jager, Horst, 4,418,015., Cl. 260-242.200.

Jager, Jonny S.: *See*—
Hemdal, Goran A. H.; and Jager, Jonny S., 4,418,396., Cl. 364-900.000.

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Yasukata, Eguchi, 4,417,532., Cl. 112-169.000.

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Furutsu, Akira, 4,417,682., Cl. 227-67.000.

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Ishii, Hiroshi; Morii, Hiroshi; and Ishijima, Saburo, 4,417,722., Cl. 266-250.000.

Jean Walterscheid GmbH: *See*—
Geisthoff, Hubert, 4,417,650., Cl. 192-56.00R.

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Barnette, William E.; and Jebens, Robert W., 4,418,405., Cl. 369-45.000.

Jenkins, John W., to Johnson, Matthey & Co., Limited. Catalysts. 4,418,215., Cl. 568-473.000.

Jennings, James R.; and Pessimisis, George N., to Katalco Corp.; and Imperial Chemical Industries Limited, a part interest. Method for recovery of metals from spent iron-chrome shift catalyst and method of forming new catalyst. 4,417,997., Cl. 252-182.000.

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Matsuda, Hisashi, 4,418,280., Cl. 250-296.000.

Jepsen, Robert E., to Air Products and Chemicals, Inc. Mounting assembly for high speed turbo discs. 4,417,855., Cl. 416-244.00A.

Jeumont Schneider Corporation: *See*—
Drevet, Michel; and Trouillet, Jean, 4,417,823., Cl. 384-115.000.

Jewett, David N. Controlled heat sink for crystal ribbon growth. 4,417,944., Cl. 156-608.000.

Jewett, Warren R., to Vit Vet Research Group, Inc. Blood pressure measuring device. 4,417,586., Cl. 128-680.000.

John, E. Roy. Digital electroencephalographic instrument and method. 4,417,592., Cl. 128-731.000.

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Roberts, Derek C., 4,417,666., Cl. 215-256.000.

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Johnson, Earl H., to Dow Chemical Company, The. Process for imparting stability to particulate vinylidene chloride polymer resins. 4,418,168., Cl. 524-109.000.

Johnson, Evelyn, administratrix: *See*—
Pehlke, Robert D.; Glass, D. Roger; Johnson, Lyle J., deceased; and Johnson, Evelyn, administratrix, 4,417,721., Cl. 266-225.000.

Johnson, Gerald T. Agricultural transporter. 4,417,747., Cl. 280-405.00B.

Johnson, James, to Sensor Developments, Inc. Zero tracking circuit for electronic weighing scale. 4,417,631., Cl. 177-210.0FP.

Johnson, Johnnie L. Karate glove. 4,417,359., Cl. 2-161.00A.

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Schildknecht, Othmar; and Cassoli, Eduardo, 4,417,676., Cl. 225-4.000.

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Marulic, Walter J.; and Johnson, Kent N., 4,417,526., Cl. 105-406.00R.

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Jenkins, John W., 4,418,215., Cl. 568-473.000.

Johnson, Oliver S.: *See*—
Cundy, Steven L.; Evans, Ronald A.; Johnson, Oliver S.; McCormack, John S.; and Nichols, Bruce A., 4,417,911., Cl. 65-3.120.

Johnson, Sigurd A., to Plan Hold Corporation. Light box. 4,418,378., Cl. 362-97.000.

Johnson, Vincent L.; and Moser, Kurt, to Admiral Maschinenfabrik GmbH. High-pressure mixing head. 4,418,041., Cl. 422-133.000.

Johnson, Weldon K., to Kerr-McGee Coal Corporation. Particulate material transfer system. 4,417,840., Cl. 414-329.000.

Johnston, Harold; Lask, Zygmunt; and Gill, Frederick H., to Northern Telecom Limited. Dielectric separation of incoming and outgoing terminations in a cable termination block. 4,417,781., Cl. 339-198.00J.

Jon, Min-Chung; Palazzo, Vito; and Sturm, George W., to Western Electric Co., Inc. Method for determining lead frame failure modes using acoustic emission and discriminant analysis techniques. 4,417,478., Cl. 73-801.000.

Jones, Charles D., to Eli Lilly and Company. Antiestrogenic and antiandrugenic benzothiophenes. 4,418,068., Cl. 424-267.000.

Joseph, A. David: *See*—
Anderson, David L.; and Joseph, A. David, 4,417,383., Cl. 29-511.000.

Jung, Michel: *See*—
Bey, Philippe; Gerhart, Fritz; Jung, Michel; and Schirlin, Daniel, 4,418,077., Cl. 424-309.000.

Jung, Rudolf H.: *See*—
Heinz, Gerhard; Schmitt, Burghard; Dorn, Ingo H.; Gausepohl, Hermann; Gerberding, Karl; Jung, Rudolf H.; Mittnacht, Hans; Pohrt, Jurgen; and Witimer, Paul, 4,418,180., Cl. 525-314.000.

Junginger, Erich: *See*—
Schnaibel, Eberhard; and Junginger, Erich, 4,417,688., Cl. 236-91.00F.

Junkins, Philip D.: *See*—
Tward, Emanuel; and Junkins, Philip D., 4,417,473., Cl. 73-304.00C.

Justice, David D.: *See*—
Kadija, Igor V.; Woodard, Kenneth E., Jr.; and Justice, David D., 4,417,959., Cl. 204-98.000.

Justice, Orien N., to CamAct Pump Corp. Submersible well pump. 4,417,860., Cl. 417-415.000.

K-Line Industries, Inc.: *See*—
Kammeraad, James A.; and Tiger, Ronald L., 4,417,376., Cl. 29-26.00A.

Kabushiki Kaisha Alps Tool: *See*—
Uehara, Sukehiro; and Saiki, Akio, 4,417,491., Cl. 82-2.700.

Kabushiki Kaisha Daini Seikosha: *See*—
Museki, Katsuo, 4,417,437., Cl. 59-20.000.

Kabushiki Kaisha Kobe Seiko Sho: *See*—
Akagi, Kazuo; Fukuda, Akihiro; and Saito, Tomio, 4,417,421., Cl. 51-16.000.
Kitamura, Minoru; Koyama, Shinji; Ito, Shuzo; Ohgami, Masahiko; Matsui, Hideo; Hirose, Isamu; Fujimoto, Hideaki; and Yasui, Tsuyoshi, 4,417,723., Cl. 266-265.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Ikeoka, Naoaki, 4,417,511., Cl. 100-229.00R.
Tsukiji, Yoshihiro; Maeda, Haruo; and Araki, Mikio, 4,417,486., Cl. 74-813.00R.

Kabushiki Kaisha Miyano Tekkosho: *See*—
Uehara, Sukehiro; and Saiki, Akio, 4,417,491., Cl. 82-2.700.

Kabushiki Kaisha Morita Seisakusho: *See*—
Matsui, Takahiro, 4,417,875., Cl. 433-101.000.

Kabushiki Kaisha Sankyo Seiki Seisakusho: *See*—
Okada, Akio, 4,418,253., Cl. 200-35.00R.

Kabushiki Kaisha Suwa Seikosha: *See*—
Momosaki, Eishi, 4,418,299., Cl. 310-361.000.
Nakamura, Haruo, 4,417,785., Cl. 350-346.000.

Kadija, Igor V.; Woodard, Kenneth E., Jr.; and Justice, David D., to Olin Corporation. Electrolytic cell having a composite electrode-membrane structure. 4,417,959., Cl. 204-98.000.

Kageyama, Hayashi, to Fuji Jukogyo Kabushiki Kaisha. System for controlling two-wheel and four-wheel drives. 4,417,641., Cl. 180-247.000.

Kahan nee Laszlo, Ilona; Hammer, Helga; and Beladi, Ilona, to Medimpex Gyogyszerkulkereskedelmi Vallalat. Therapeutically active complexes of tetracyclines. 4,418,060., Cl. 424-227.000.

Kahn, Marvin L.; and O'Mahony, John S., to Rich Products Corporation. Improved fruit composition having a depressed freezing point. 4,418,082., Cl. 426-51.000.

Kaiser, Peter: *See*—
Cziptschirsch, Kurt; Viertel, Lothar; and Kaiser, Peter, 4,417,761., Cl. 296-97.00H.

Kajita, Harumasa: *See*—
Kawamoto, Noriyuki; Higashi, Toru; and Kajita, Harumasa, 4,418,424., Cl. 455-4.000.

Kako, Hiroyoshi; and Kobayashi, Nobuo, to Toyota Jidosha Kogyo Kabushiki Kaisha. Triboelectrification type electrostatic paint gun for paint in a powder form. 4,417,696., Cl. 239-690.000.

Kaldor, Andrew: *See*—
Stein, Alexander; Rabinowitz, Paul; and Kaldor, Andrew, 4,417,822., Cl. 374-129.000.

Kalish, Richard J.: *See*—
Groat, Dennis E.; Sell, Richard W.; Kalish, Richard J.; and Melton, Horace E., 4,418,057., Cl. 424-151.000.

Kameda, Masahiro, to Ricoh Co., Ltd. Electrophotographic element comprises arsenic selenide doped with Bi. 4,418,136., Cl. 430-95.000.

Kameno, Yoshito: *See*—
Kojima, Atsuyuki; Irie, Tsunemasa; Harada, Shuichi; Kameno, Yoshito; Katsube, Junki; and Yamamoto, Hisao, 4,418,079., Cl. 424-330.000.

Kametani, Keiichiro: *See*—
Izumo, Masanori; Kametani, Keiichiro; Ota, Sigehito; and Mikami, Kenji, 4,418,046., Cl. 423-245.000.

Kami, Tomohiro: *See*—
Ichinomiya, Tsutomu; Kusunoki, Toshio; and Kami, Tomohiro, 4,417,587., Cl. 128-682.000.

Kamibayashi, Masato; Tsuchiya, Shinji; Hiratsuka, Kozo; and Tsuchiya, Susumu, to Tokyo Tanabe Company, Limited. 1,4-Dihydropyridine derivatives. 4,418,197., Cl. 546-256.000.

Kamichik, Stephen. Electronic sequential combination locking device. 4,418,330., Cl. 340-64.000.

Kamiya, Michihiko: *See*—
Yoshimi, Akiro; Kamiya, Michihiko; and Moriya, Mitsutoshi, 4,417,618., Cl. 165-12.000.

Kamleitner, Ewald: *See*—
Deutschmann, Herbert; and Kamleitner, Ewald, 4,417,555., Cl. 123-372.000.

Kammeraad, James A.; and Tiger, Ronald L., to K-Line Industries, Inc. Adjustable cylinder head holder. 4,417,376., Cl. 29-26.00A.

Kanai, Masaaki: *See*—
Sakurai, Yoshimi; Furukawa, Yoshimi; Kanai, Masaaki; and Osada, Yasufumi, 4,417,775., Cl. 339-5.00M.

Kano, Ichiro, to Canon Kabushiki Kaisha. Observation device. 4,417,789., Cl. 350-513.000.
Kao Soap Co., Ltd.: *See—*
Mizutani, Hiroshi; and Tsuchiya, Yoshimi, 4,417,893., Cl. 604-366.000.
Okumura, Takeo; and Imai, Miho, 4,417,595., Cl. 132-85.000.
Karamian, Narbik A. Laboratory stand assembly. 4,418,040., Cl. 422-101.000.
Kariya, Yutaka, to Casio Computer Co., Ltd. Data registering system with keyed in and voiced data comparison. 4,418,412., Cl. 371-68.000.
Karpik, Joseph T.: *See—*
Doerer, Richard P.; and Karpik, Joseph T., 4,418,031., Cl. 264-241.000.
Karpinia, Walter. Fast and easy charcoal starter. 4,417,565., Cl. 126-25.00B.
Karsan, Demir I.: *See—*
Abbott, Philip A.; Dailey, James E.; Karsan, Demir I.; and Mangiavacchi, Andrea, 4,417,831., Cl. 405-227.000.
Kasai, Yutaka; and Naramoto, Satoru, to Shiseido Company, Ltd. Stick-type cosmetic applicator. 4,417,827., Cl. 401-68.000.
Kashi, Takeshi: *See—*
Yamaji, Tadao; Nakajima, Toshi; and Kashi, Takeshi, 4,417,754., Cl. 285-104.000.
Kathiwa, Norio: *See—*
Ueda, Takashi; and Kashiwa, Norio, 4,418,184., Cl. 526-125.000.
Kasuga, Takuzo; Ikenaga, Yukio; and Yamawaki, Masami, to Polyplastics Co., Ltd. Process for treating the surface of polyacetal resin. 4,418,162., Cl. 523-205.000.
Kasuga, Takuzo; Toga, Yuzo; Okamoto, Ichiro; and Takahashi, Katsuhiko, to Daicel Chemical Industries, Ltd.; and Polyplastics Co., Ltd. Polyester composition containing 2-methyl-1,3-propylene glycol dibenzoate. 4,418,172., Cl. 524-292.000.
Katagiri, Kazuharu; Umehara, Shoji; Watanabe, Katsunori; and Ishikawa, Shozo, to Canon Kabushiki Kaisha. Disazo photoconductive material and electrophotographic photosensitive member having disazo pigment layer. 4,418,133., Cl. 430-58.000.
Katalco Corp.: *See—*
Jennings, James R.; and Pessimisis, George N., 4,417,997., Cl. 252-182.000.
Kato, Kentaro: *See—*
Matsuda, Minoru; Kato, Kentaro; and Suzuki, Masatoshi, 4,417,559., Cl. 123-559.000.
Kato, Masami, to Toska Co., Ltd. Cluster type tag pin assembly. 4,417,656., Cl. 206-346.000.
Kato, Toshikazu; and Saitou, Sinichi, to Olympus Optical Co., Ltd. Tape cassette. 4,417,705., Cl. 242-199.000.
Kato, Yoji: *See—*
Kobayashi, Akihiro; Kida, Masashi; Ito, Novuei; and Kato, Yoji, 4,417,550., Cl. 123-145.00A.
Katsube, Junki: *See—*
Kojima, Atsuyuki; Irie, Tsunemasa; Harada, Shuichi; Kameno, Yoshito; Katsube, Junki; and Yamamoto, Hisao, 4,418,079., Cl. 424-330.000.
Katsuyama, Harumi; and Shishido, Tadao, to Fuji Photo Film Co., Ltd. Color indicator composition and film for detecting hydrogen peroxide. 4,418,037., Cl. 422-56.000.
Kaufmann, Gerhard: *See—*
Waldstrom, Ejvind; and Kaufmann, Gerhard, 4,417,610., Cl. 141-91.000.
Kawabata, Yasuro: *See—*
Hosaka, Shuntaro; Murao, Yasuo; and Kawabata, Yasuro, 4,418,152., Cl. 436-511.000.
Kawaguchi, Hideo; and Inayama, Takayuki, to Fuji Photo Film Co., Ltd. Photographic light-sensitive materials. 4,418,141., Cl. 430-530.000.
Kawai, Hisasi; Egami, Tsuneyuki; Kohama, Tokio; and Obayashi, Hideki, to Nippon Soken, Inc. Gas flow measuring device. 4,417,471., Cl. 73-204.000.
Kawakami, Kanji: *See—*
Hayashida, Hiroshi; Takahashi, Tadashi; Miyashita, Kunio; and Kawakami, Kanji, 4,418,372.; Cl. 360-113.000.
Kawakami, Moriatsu: *See—*
Uchida, Isamu; and Kawakami, Moriatsu, 4,418,417., Cl. 377-8.000.
Kawamoto Industrial Co., Ltd.: *See—*
Kuroda, Susumu; and Komori, Tadashi, 4,417,374., Cl. 28-181.000.
Kawamoto, Noriyuki; Higashi, Toru; and Kajita, Harumasa, to Matsushita Electric Industrial Co., Ltd. Cable television transmission control system. 4,418,424., Cl. 455-4.000.
Kawasaki, Kikuo; Yoshida, Kazuo; Nonoyama, Nobuo; Yamaguchi, Toshibumi; Hasegawa, Toshio; and Okamura, Jitsuo, to Fuji Electric Co., Ltd. Automatic vending machine with ice preparation. 4,417,671., Cl. 222-56.000.
Kawasaki Steel Corporation: *See—*
Nakanishi, Kyoji; Nozaki, Tsutomu; and Emi, Toshihiko, 4,417,719., Cl. 266-78.000.
Kawashima, Hiroko: *See—*
Okonogi, Tsuneo; Fukatsu, Shunzo; Hachisu, Mitsugu; Kawashima, Hiroko; Shitoh, Keiko; and Sekizawa, Yasuharu, 4,418,070., Cl. 424-270.000.
Kawashima, Sadao; and Ito, Chiharu, to Asahi Fiber Glass Company Limited. Reinforcing mat for fiber reinforced plastic material. 4,418,113., Cl. 428-213.000.
Kazenmaier, Ulrich; and Quast, Gunter, to M.A.N. Maschinenfabrik Augsburg-Nuremberg Aktiengesellschaft. Sealing arrangement for wet cylinder liners. 4,417,549., Cl. 123-41.840.
Kealy, Joanne P.; and Zenk, Robert E., to Minnesota Mining and Manufacturing Co. Tackified crosslinked acrylic adhesives. 4,418,120., Cl. 428-343.000.
Keane, James. Treatment of waters with broad spectrum contaminants. 4,417,985., Cl. 210-707.000.
Keeler, Manley S.: *See—*
Schwarzbach, Richard J.; Keeler, Manley S.; Cavaioni, Randy J.; and Chapman, Michael K., 4,418,333., Cl. 340-310.00A.
Keglewitsch, Josef, to Marathon Electric Manufacturing Corporation. Channel clamp. 4,417,373., Cl. 24-458.000.
Keil, Erich H., to Hoechst Aktiengesellschaft. Process for drawing tows of filaments in water. 4,418,032., Cl. 264-289.600.
Keklak, Ronald: *See—*
Couture, Michael V.; and Keklak, Ronald, 4,417,612., Cl. 150-40.000.
Kelleher, Kevin C., to RCA Corporation. Video disc player with RFI reduction circuit including sync tip clamp. 4,418,363., Cl. 358-336.000.
Kelley, Dana A.: *See—*
Christner, Larry G.; and Kelley, Dana A., 4,417,872., Cl. 432-18.000.
Kelley, Mellis M.: *See—*
Smith, Richard R.; and Kelley, Mellis M., 4,418,188., Cl. 528-274.000.
Kelly, Richard P.: *See—*
Holtey, Thomas O.; Kelly, Richard P.; Noyes, Steven S.; and Raymond, James C., 4,418,384., Cl. 364-200.000.
Kendall Company, The: *See—*
Cianci, James P., 4,417,891., Cl. 604-317.000.
Kendall, Ray, to Dynalectron Corporation. Retractable caster assembly having a lever in rolling engagement with a pressure plate. 4,417,738., Cl. 280-43.170.
Kennecott Corporation: *See—*
Lopacki, John B.; and Emes, Harry R., 4,417,389., Cl. 29-619.000.
Raymond, Yvan G., 4,418,415., Cl. 373-130.000.
Kennedy, Richard B., to Crehan, Patrick James; and Fricke, Richard J. Polyurethane foams and processes for preparation. 4,417,998., Cl. 252-182.000.
Kenny, Andrew A., to Eaton Corporation. Vacuum signal integrator. 4,417,599., Cl. 137-85.000.
Kerr-McGee Coal Corporation: *See—*
Johnson, Weldon K., 4,417,840., Cl. 414-329.000.
Kessler, Achim: *See—*
Krautkremer, Franz; Kessler, Achim; and Krautkraemer, Gerd, 4,417,877., Cl. 440-38.000.
Key Tech Corporation: *See—*
Carstens, Ronald, 4,418,111., Cl. 428-145.000.
Keyboard Company, The: *See—*
Muller, Michael; and Butts, Gary C., 4,418,257., Cl. 200-159.00B.
Kida, Masashi: *See—*
Kobayashi, Akihiro; Kida, Masashi; Ito, Novuei; and Kato, Yoji, 4,417,550., Cl. 123-145.00A.
Kief, Garry C.: *See—*
Bevan, Mark H.; and Kief, Garry C., 4,417,774., Cl. 312-108.000.
Kim, Dae K.; and Bertolacini, Ralph J., to Standard Oil Company (Indiana). Hydrocarbon conversion catalyst system. 4,418,006., Cl. 502-73.000.
Kim, Jung S. Screwdriver. 4,417,611., Cl. 145-61.0EA.
Kim, Leo, to Shell Oil Company. Process for the epoxidation of olefins. 4,418,203., Cl. 549-531.000.
Kimberly-Clark Corporation: *See—*
Sigl, Wayne C., 4,417,938., Cl. 156-270.000.
Kimura, Yoshikazu: *See—*
Ueda, Yoshihiro; Kimura, Yoshikazu; Yonehara, Hiroyuki; and Tanabe, Kenjiro, 4,417,810., Cl. 355-74.000.
Kincheloe, David, to King Instrument Corporation. Tape splicing blocks. 4,417,942., Cl. 156-502.000.
Kindelvich, Frederick T.: *See—*
Commins, Alfred D.; and Kindelvich, Frederick T., 4,417,431., Cl. 52-715.000.
Kindl, George F.; Michaud, Orean E.; and Brien, Joseph E., to Colt Industries Operating Corp. Laser measuring system and method for turning machine. 4,417,816., Cl. 356-357.000.
King, Eddie W.: *See—*
Morgan, Annis R., Jr.; and King, Eddie W., 4,417,450., Cl. 62-126.000.
King Instrument Corporation: *See—*
Kincheloe, David, 4,417,942., Cl. 156-502.000.
Kirchhof, Gunther: *See—*
Notzel, Joachim; Schatz, Antos; Buczek, Harthmuth; and Kirchhof, Gunther, 4,417,809., Cl. 355-46.000.
Kishi, Hirotoshi, to Canon Kabushiki Kaisha. Image synthesizing device. 4,417,805., Cl. 355-14.00R.
Kitadate, Kenichiro; and Tanimoto, Yoshinori, to Tokyo Shibaura Denki Kabushiki Kaisha. X-ray apparatus. 4,418,421., Cl. 378-199.000.
Kitahiro, Isamu: *See—*
Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,418,284., Cl. 250-578.000.
Kitamura, Masami, to Matsushita Electric Works, Ltd. Electric shaver. 4,417,397., Cl. 30-34.200.
Kitamura, Minoru; Koyama, Shinji; Ito, Shuzo; Ohgami, Masahiko; Matsui, Hideo; Hirose, Isamu; Fujimoto, Hideaki; and Yasui, Tsuyoshi, to Kabushiki Kaisha Kobe Seiko Sho. Tuyere for blowing gases into molten metal bath container. 4,417,723., Cl. 266-265.000.

Kitz Corporation: *See*—
Tomaru, Hisao, 4,417,929., Cl. 148-433.000.

Kiuchi, Masashi: *See*—
Mitsuhashi, Yasuo; and Kiuchi, Masashi, 4,418,137., Cl. 430-109.000.

Kiyomura, Yoshiteru; Masuda, Yutaka; and Kojima, Tatsuji, to Toray Industries, Inc. Fur-like napped fabric and process for manufacturing same. 4,418,104., Cl. 428-15.000.

Klein, H. Joseph: *See*—
Iyer, Sankar P.; Lewis, Roy D.; Klein, H. Joseph; Hord, William C.; and Ailor, James C., 4,417,617., Cl. 164-254.000.

Klein, Joseph T.: *See*—
Davis, Larry; and Klein, Joseph T., 4,418,067., Cl. 424-267.000.

Kleiner, Walter, to Staeubli Ltd. Method and dobby for synchronizing all heddle frames of a weaving machine. 4,417,604., Cl. 139-329.000.

Klopper, Detlev: *See*—
Esser, Fred; Klopper, Detlev; Lachner, Walter; and Kruger, Albrecht, 4,418,414., Cl. 373-24.000.

Klose, Werner; and Auel, Theodor, to Hoechst Aktiengesellschaft. Process for the manufacture of 1-aminoalkane-1,1-diphosphonic acids. 4,418,019., Cl. 260-502.50C.

Klug, Frederic J.: *See*—
Prochazka, Svante; and Klug, Frederic J., 4,418,024., Cl. 264-1.200.
Prochazka, Svante; and Klug, Frederic J., 4,418,025., Cl. 264-1.200.

Kluge, Reimund: *See*—
Bauer, Walter; Farber, Heinrich; and Kluge, Reimund, 4,418,420., Cl. 378-187.000.

Knapp, Robert E., to Thomas & Betts Corporation. Pitch transition connector. 4,417,780., Cl. 339-99.00R.

Kneba, Michael: *See*—
Wolfrum, Jurgen; Kneba, Michael; and Clough, Peter N., 4,417,964., Cl. 204-158.00R.

Knop, Karl H.; and Gale, Michael T., to RCA Corporation. Multiple image encoding using surface relief structures as authenticating device for sheet-material authenticated item. 4,417,784., Cl. 350-162.190.

Knowles, Henry L.; and Winningham, James P. Multiple bag dispenser. 4,417,669., Cl. 221-26.000.

Knowlton, William K., to General Electric Company. Charge converter for vibration monitoring instrumentation. 4,417,476., Cl. 73-660.000.

Kobayashi, Akihiro; Kida, Masashi; Ito, Novuei; and Kato, Yoji, to Nippon Soken, Inc. Engine preheating apparatus. 4,417,550., Cl. 123-145.00A.

Kobayashi, Fujio: *See*—
Yamaguchi, Shoichiro; and Kobayashi, Fujio, 4,418,387., Cl. 364-414.000.

Kobayashi, Masato; Hoshino, Yasushi; Tateishi, Kazuyoshi; Isobe, Minoru; Konishi, Hiroshi; Koga, Yoshitomo; and Hagiwara, Shigemi, to Oki Electric Industry Co., Ltd. Pressure fixing device. 4,417,803., Cl. 355-3.0FU.

Kobayashi, Nobuo: *See*—
Kako, Hiroyoshi; and Kobayashi, Nobuo, 4,417,696., Cl. 239-690.000.

Kobs, Frederick E.: *See*—
Ryan, Joseph L.; Safdie, Elias; Watkins, Richard R.; and Kobs, Frederick E., 4,418,343., Cl. 340-723.000.

Kobuke, Takayoshi: *See*—
Izumi, Toshiaki; Taketomi, Yasuta; and Kobuke, Takayoshi, 4,418,12[illegible] Cl. 428-694.000.

Koch, Adolf, to Autohaus Lorinser GmbH & Co. Tail spoiler for motor vehicles, in particular for passenger cars with a tail trunk space. 4,417,760., Cl. 296-1.00S.

Kodama, Shun-ichi: *See*—
Yamabe, Masaaki; Kojima, Gen; Wachi, Hiroshi; and Kodama, Shun-ichi, 4,418,186., Cl. 526-247.000.

Koehne, Rainer: *See*—
Krauss, Ralf; and Koehne, Rainer, 4,417,966., Cl. 204-176.000.

Koei Chemical Co., Ltd.: *See*—
Yasuda, Sinichi; Kurohara, Takayuki; and Taguro, Akira, 4,418,221., Cl. 568-757.000.

Koga, Kenji: *See*—
Terashima, Shiro; Tanno, Norihiko; and Koga, Kenji, 4,418,218., Cl. 568-633.000.

Koga, Yoshitomo: *See*—
Kobayashi, Masato; Hoshino, Yasushi; Tateishi, Kazuyoshi; Isobe, Minoru; Konishi, Hiroshi; Koga, Yoshitomo; and Hagiwara, Shigemi, 4,417,803., Cl. 355-3.0FU.

Kogane, Mikio, to Fuji Photo Film Co., Ltd. Photographic paper cutter. 4,417,808., Cl. 355-29.000.

Kohama, Tokio: *See*—
Kawai, Hisasi; Egami, Tsuneyuki; Kohama, Tokio; and Obayashi, Hideki, 4,417,471., Cl. 73-204.000.

Kohlstette, Werner; and Niemerg, Willi, to Westfalia Separator AG. Centrifuge with vertical axis of rotation. 4,417,885., Cl. 494-23.000.

Kohn, Gary A., to Otis Engineering Corporation. Safety valve. 4,417,600., Cl. 137-553.000.

Kohsaka, Yoji: *See*—
Ohuchi, Chiaki; Kohsaka, Yoji; and Suenaga, Hiroyoshi, 4,417,493., Cl. 83-15.000.

Kojima, Atsuyuki; Irie, Tsunemasa; Harada, Shuichi; Kameno, Yoshito; Katsube, Junki; and Yamamoto, Hisao, to Sumitomo Chemical Company, Limited. Conjugated ketone compounds in preventing platelet thrombosis. 4,418,079., Cl. 424-330.000.

Kojima, Gen: *See*—
Yamabe, Masaaki; Kojima, Gen; Wachi, Hiroshi; and Kodama, Shun-ichi, 4,418,186., Cl. 526-247.000.

Kojima, Tatsuji: *See*—
Kiyomura, Yoshiteru; Masuda, Yutaka; and Kojima, Tatsuji, 4,418,104., Cl. 428-15.000.

Kolb, Gunter: *See*—
Probst, Joachim; Kolb, Gunter; Muller, Friedhelm; and Baumgen, Heinz, 4,418,175., Cl. 524-555.000.

Komaroff, Iwan: *See*—
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,417,693., Cl. 239-453.000.

Komatsuzaki, Yasuo, to Shin-Etsu Handotai Co., Ltd. Apparatus for chemical etching of a wafer material. 4,417,945., Cl. 156-639.000.

Kommanditbolaget United Stirling (Sweden) A.B. & Co.: *See*—
Lorant, Stefan, 4,417,443., Cl. 60-525.000.

Komori, Tadashi: *See*—
Kuroda, Susumu; and Komori, Tadashi, 4,417,374., Cl. 28-181.000.

Komura, Hirotsugu: *See*—
Tabata, Yoichiro; Ueguri, Shigeo; Komura, Hirotsugu; and Ito, Toshio, 4,418,265., Cl. 219-130.400.

Kondo, Shigeru: *See*—
Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,418,284., Cl. 250-578.000.

Konishi, Hiroshi: *See*—
Kobayashi, Masato; Hoshino, Yasushi; Tateishi, Kazuyoshi; Isobe, Minoru; Konishi, Hiroshi; Koga, Yoshitomo; and Hagiwara, Shigemi, 4,417,803., Cl. 355-3.0FU.

Konishiroku Photo Industry Co., Ltd.: *See*—
Yamazaki, Yoshio; Nakamura, Ken; and Inowa, Shigeru, 4,417,807., Cl. 355-15.000.

Kono, Masao: *See*—
Tani, Tatsuo; and Kono, Masao, 4,417,806., Cl. 355-14.0SH.

Kopecky, Ivyl D., to Haybuster Manufacturing, Inc. Planting apparatus. 4,417,530., Cl. 111-73.000.

Kopp, Richard: *See*—
Rasshofer, Werner; Kopp, Richard; and Paul, Reiner, 4,418,159., Cl. 521-121.000.

Koppers Company, Inc.: *See*—
Irwin, Rodney C., 4,417,952., Cl. 202-241.000.

Koren, Stein, to Moss Rosenberg Verft A/S. Propulsion machinery for LNG ships. 4,417,878., Cl. 440-3.000.

Kornau, Horst: *See*—
Brachmann, Walter; Kornau, Horst; and Thiel, Klaus, 4,418,173., Cl. 524-425.000.

Korte, Ralph J., to Champion International Corporation. Erectable carton with adhesive release. 4,417,685., Cl. 229-41.00B.

Koshi, Isei, to Fuji Terumo Co., Ltd. Connector for catheter. 4,417,887., Cl. 604-162.000.

Koss Corporation: *See*—
Mathis, Terry D., 4,418,248., Cl. 179-156.00R.

Koster, Harry D., to Chemical Dynamics, Inc. Splicer for label feeder. 4,417,940., Cl. 156-351.000.

Kouno, Tsutom, to Fujitsu Limited. Coordinate reading apparatus. 4,418,242., Cl. 178-19.000.

Koyama, Shinji: *See*—
Kitamura, Minoru; Koyama, Shinji; Ito, Shuzo; Ohgami, Masahiko; Matsui, Hideo; Hirose, Isamu; Fujimoto, Hideaki; and Yasui, Tsuyoshi, 4,417,723., Cl. 266-265.000.

Kramer, Wolfgang; Buchel, Karl H.; Haller, Ingo; and Plempel, Manfred, to Bayer Aktiengesellschaft. Diastereomeric 1-(4-chlorophenoxy)-1-(1-imidazolyl)-3,3-dimethyl-2-butanol compounds and their antimycotic use. 4,418,072., Cl. 424-273.00R.

Krause, Gerhard, to Erwin Sick GmbH Optik-Elektronik. Apparatus for measuring the speed of flow of a flowable medium by determining the transit time of sound waves therein. 4,417,481., Cl. 73-861.280.

Krauss, Ralf; and Koehne, Rainer, to Innovatron Krauss & Co. Apparatus and method of producing ozone. 4,417,966., Cl. 204-176.000.

Krauss, Werner, to Claudius Peters AG. Silo for bulk material. 4,417,832., Cl. 406-90.000.

Krautkraemer, Gerd: *See*—
Krautkremer, Franz; Kessler, Achim; and Krautkraemer, Gerd, 4,417,877., Cl. 440-38.000.

Krautkremer, Franz; Kessler, Achim; and Krautkraemer, Gerd, to Schottel-Werft Josef Becker GmbH & Co. KG. Water-jet drive mechanism for driving and controlling of particularly shallow-draught watercrafts. 4,417,877., Cl. 440-38.000.

Krevitz, Kenneth: *See*—
Pytlewski, Louis L.; Iaconianni, Frank J.; Krevitz, Kenneth; and Smith, Arthur B., 4,417,977., Cl. 208-262.000.

Krome, Gerd: *See*—
Danz, Eckehard; and Krome, Gerd, 4,418,233., Cl. 570-239.000.

Kronenberg, Kurt. Closure for flexible containers. 4,417,371., Cl. 24-30.50R.

Kronogard, Clas-Olof: *See*—
Kronogard, Sven-Olof; Kronogard, Clas-Olof; and Kronogard, Hakan, 4,417,551., Cl. 123-198.00F.

Kronogard, Hakan: *See*—
Kronogard, Sven-Olof; Kronogard, Clas-Olof; and Kronogard, Hakan, 4,417,551., Cl. 123-198.00F.

Kronogard, Sven-Olof; Kronogard, Clas-Olof; and Kronogard, Hakan, to Kronogard, Sven-Olof. Vehicle engine. 4,417,551., Cl. 123-198.00F.

Kruger, Albrecht: *See—*
Esser, Fred; Klopper, Detlev; Lachner, Walter; and Kruger, Albrecht, 4,418,414., Cl. 373-24.000.

Krupp, Viktor A.: *See—*
Qualitz, Marion; and Krupp, Viktor A., 4,417,752., Cl. 282-27.500.

Kube, Gebhard K., to Exxon Research & Engineering Co. Separate quench and evaporative cooling of compressor discharge stream. 4,417,847., Cl. 415-1.000.

Kubis, Charles S.: *See—*
Roth, Donald J.; Kubis, Charles S.; and Walter, John, 4,417,667., Cl. 220-67.000.

Kubota Ltd.: *See—*
Fujimoto, Tadao; Fujiuchi, Hiroyuki; Shimizu, Kenichi; and Ueda, Seiichiro, 4,417,529., Cl. 110-346.000.
Yamaji, Tadao; Nakajima, Toshi; and Kashi, Takeshi, 4,417,754., Cl. 285-104.000.

Kubota, Naohiro: *See—*
Nakahara, Yutaka; Kubota, Naohiro; Hirai, Bunji; and Haruna, Tohru, 4,418,196., Cl. 546-242.000.

Kuesters, Werner: *See—*
Lungershausen, Rolf; Martin, Christoph; Marcinowski, Stefan; Siegel, Hardo; and Kuesters, Werner, 4,418,146., Cl. 435-106.000.

Kugler, Edwin L.: *See—*
McCandlish, Larry E.; and Kugler, Edwin L., 4,418,154., Cl. 518-714.000.

Kulas, Walenty. Dental articulator. 4,417,873., Cl. 433-57.000.

Kulik, Metro D., to Conoco Inc. Nitric oxide and sulfur oxide absorption by scrubbing with $Fe^{+}+/S_2O_3^{-}$. 4,418,044., Cl. 423-235.000.

Kulischenko, Walter, to Pennwalt Corporation. Flexible shaft stick control mechanism for steering marine vessels. 4,417,879., Cl. 440-62.000.

Kumagai, Isao: *See—*
Yamaguchi, Kenzo; Ichisaka, Teruo; Ikegami, Tadao; and Kumagai, Isao, 4,417,970., Cl. 204-257.000.

Kumagai, Tadanobu; and Iwase, Yoshinobu, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Joint assembly. 4,417,880., Cl. 464-111.000.

Kumazawa, Eitaro: *See—*
Saiki, Yukihiro; Kumazawa, Eitaro; and Ishioka, Yozo, 4,417,697., Cl. 241-65.000.

Kunugi, Yoshiro: *See—*
Tokumo, Akio; and Kunugi, Yoshiro, 4,418,323., Cl. 331-111.000.

Kuo, Vincent H. S.; and Wamser, Christian A., to Allied Corporation. Aqueous basic polyaluminum-iron halide solutions. 4,417,996., Cl. 252-175.000.

Kuraray Co., Ltd.: *See—*
Murakami, Tetsuo; Miyazaki, Hirotoshi; and Harima, Hiroshi, 4,418,163., Cl. 523-205.000.
Tani, Masami; Esaki, Tamemaru; and Ohno, Yoshikata, 4,418,103., Cl. 428-4.000.

Kuroda, Kazuyuki; Ikematsu, Riyoiti; and Nitta, Kazunari, to Mitsui Toatsu Chemicals, Inc. Process for the production of 2,3-dichloropropionitrile. 4,418,018., Cl. 260-465.700.

Kuroda, Susumu; and Komori, Tadashi, to Kawamoto Industrial Co., Ltd. Apparatus for simultaneously sizing of a large number of long fiber yarns. 4,417,374., Cl. 28-181.000.

Kurohara, Takayuki: *See—*
Yasuda, Sinichi; Kurohara, Takayuki; and Taguro, Akira, 4,418,221., Cl. 568-757.000.

Kusui, Yoshino: *See—*
Fujimori, Tohru; and Kusui, Yoshino, 4,418,373., Cl. 360-132.000.

Kusunoki, Toshio: *See—*
Ichinomiya, Tsutomu; Kusunoki, Toshio; and Kami, Tomohiro, 4,417,587., Cl. 128-682.000.

Kyral, Josef: *See—*
Beranek, Ivan; Kyral, Josef; Uhlir, Miroslav; and Zlesak, Ivan, 4,417,923., Cl. 75-257.000.

L & R Manufacturing Company: *See—*
Marshall, Patrick J., 4,418,297., Cl. 310-316.000.

Lachner, Walter: *See—*
Esser, Fred; Klopper, Detlev; Lachner, Walter; and Kruger, Albrecht, 4,418,414., Cl. 373-24.000.

Lago, Rudolph M.: *See—*
Haag, Werner O.; and Lago, Rudolph M., 4,418,235., Cl. 585-407.000.

Lalezari, Iraj, to Montefiore Medical Center; and Albert Einstein College of Medicine at Yeshiva University, The, a part interest. Nucleoside ester compositions. 4,418,059., Cl. 424-180.000.

Lam, Chiu T.: *See—*
Angevine, Philip J.; and Lam, Chiu T., 4,417,973., Cl. 208-46.000.

Lambert, Phillip R.: *See—*
Morrow, George W.; and Lambert, Phillip R., 4,418,119., Cl. 428-342.000.

Landler, Josef; and Mayr, Max, to Alkor GmbH Kunstoffverkauf. Method of producing a flocked composite body. 4,418,106., Cl. 428-89.000.

Landron, Rafael: *See—*
Davis, Earl K.; Landron, Rafael; and Taylor, Scot W., 4,417,913., Cl. 65-59.100.

Landry, Kossuth J., Jr. Soil erosion prevention block insert and apparatus for positioning. 4,417,842., Cl. 414-572.000.

Lang, William H.: *See—*
Chang, Clarence D.; and Lang, William H., 4,418,155., Cl. 518-719.000.

Langen, Hans; Wolff, Erich; and Ranz, Erwin, to Agfa Gevaert Aktiengesellschaft. Light-sensitive photographic silver halide recording material. 4,418,142., Cl. 430-549.000.

Langman, William F., to Omark Industries, Inc. Steel railroad sleeper. 4,417,690., Cl. 238-59.000.

Laporte Industries Limited: *See—*
Dyer, Alan; and Araya, Abraham, 4,418,048., Cl. 423-305.000.

Lardi, Francesco: *See—*
Podolsky, Leaman B.; Ronnen, Uri G.; and Lardi, Francesco, 4,418,285., Cl. 290-40.00R.

Lareau, John P.: *See—*
Edwards, Lawrence J.; and Lareau, John P., 4,418,315., Cl. 324-202.000.

Larson, Kenneth N.; Davis, John S.; and Bostick, Lewis M., to Allied Corporation. Information exchange processor. 4,418,382., Cl. 364-200.000.

Larson, Willis A.; and Van Zeeland, Anthony J., to Oak Industries Inc. Flexible connector with interconnection between conductive traces. 4,418,239., Cl. 174-34.000.

Lask, Zygmunt: *See—*
Johnston, Harold; Lask, Zygmunt; and Gill, Frederick H., 4,417,781., Cl. 339-198.00J.

Latham, Allen, Jr.: *See—*
Schoendorfer, Donald W.; and Latham, Allen, Jr., 4,417,884., Cl. 494-4.000.

Latsch, Reinhard, to Robert Bosch GmbH. Method for closed-loop control of the instant of ignition. 4,417,556., Cl. 123-425.000.

Lauer, Gail D.: *See—*
Ptashne, Mark; Lauer, Gail D.; Roberts, Thomas M.; and Backman, Keith C., 4,418,149., Cl. 435-253.000.

Lauhoff, Heinz; and Bokamp, Alfons, to Bernhard Beumer Maschinenfabrik KG. Tensioning device for a vertical conveyor. 4,417,654., Cl. 198-815.000.

Laurel Bank Machine Co., Ltd.: *See—*
Uchida, Isamu; and Kawakami, Moriatsu, 4,418,417., Cl. 377-8.000.

Laurin, Bernard L.: *See—*
Dawson, W. Clifford; Bard, George D.; Smith, Luther W.; and Laurin, Bernard L., 4,417,790., Cl. 351-166.000.

Lawrence, John C.; Stewart, Andrew D. G.; and Dodson, John S. Centering and working gemstones. 4,417,564., Cl. 125-30.00R.

Lazerson, Max M.: *See—*
Bohme, Rolf C.; van Zyl, Ian D.; and Lazerson, Max M., 4,417,817., Cl. 356-380.000.

Ledley, Robert S., to Georgetown University. Grooved gel. 4,417,967., Cl. 204-180.00G.

Lee, Biing-Lin: *See—*
DeWitt, Elmer J.; Minchak, Robert J.; Lee, Biing-Lin; and Benedikt, George M., 4,418,179., Cl. 525-249.000.

Lee, Cleve L., to Nordson Corporation. Power post for film frame for skin packaging machine. 4,417,432., Cl. 53-77.000.

Lee, Lawrence L., to Magnavox Government and Industrial Electronics Company. Apparatus for individually encapsulating magnetic particles. 4,417,543., Cl. 118-620.000.

Lee, Roy, Jr. Method of supporting pipe during machining. 4,417,363., Cl. 10-107.0PH.

Le Grand, Yves-Marie, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Interference limiting two-port network for 1+1 type transmission systems. 4,418,245., Cl. 179-2.510.

Lehmann, Rudolf: *See—*
Hennemann, Manfred; Andree, Hans; Lehmann, Rudolf; Schnegelberger, Harald; and Bellinger, Horst, 4,417,895., Cl. 8-137.000.

Lehr, Klaus; and Heymer, Gero, to Hoechst Aktiengesellschaft. Process for separating metals from aqueous solutions. 4,418,043., Cl. 423-22.000.

Lehrer, William I., to Fairchild Camera and Instrument Corporation. Method for forming a low temperature binary glass. 4,417,914., Cl. 65-60.530.

Leichti, Robert J.: *See—*
House, Cynthia B.; and Leichti, Robert J., 4,418,101., Cl. 427-393.000.

Leining, Lyndon R., to Geo. A. Hormel & Company. Mid-section skinning apparatus. 4,417,367., Cl. 17-21.000.

Leithauser, Horst: *See—*
Rigler, Josef K.; Wienhofer, Ekkehard; Leithauser, Horst; and Trukenbrod, Karl, 4,418,156., Cl. 521-56.000.

Le Lannou, Michel, to Valeo S.A. Friction lining. 4,418,115., Cl. 428-283.000.

Lentz, David J.: *See—*
Houghton, Richard B.; and Lentz, David J., 4,417,588., Cl. 128-713.000.

Leong, Ken. Human powered hang glider. 4,417,707., Cl. 244-11.000.

Lese, Gregory; and Nash, Donald H., to Bell Telephone Laboratories, Incorporated. Frequency modulation transmitter for voice or data. 4,418,416., Cl. 375-5.000.

Le Vantine, Allan D. Pulsating, oscillating bicycle reflector. 4,417,783., Cl. 350-99.000.

Lever Brothers Company: *See—*
Lips, Alexander; Wells, Martin A.; and Willis, Edwin, 4,417,995., Cl. 252-174.230.

Levitt, George; and Sauers, Richard F., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,417,917., Cl. 71-93.000.

Levy, Samuel, to General Electric Company. Fluid self-steering railway vehicle truck. 4,417,525., Cl. 105-166.000.

Lewis, Alan C.; Ragard, Phillip A.; and Shiptenko, Robert C., to Universal Instruments Corporation. Centering device for electrical components. 4,417,683., Cl. 227-109.000.

Lewis, John C., to Park-Ohio Industries, Inc. Method and apparatus of uniform induction heating of an elongated workpiece. 4,418,259., Cl. 219-10.430.

Lewis, Roy D.: *See—*
Iyer, Sankar P.; Lewis, Roy D.; Klein, H. Joseph; Hord, William C.; and Ailor, James C., 4,417,617., Cl. 164-254.000.

Lewis, Shawn D. Pocket handkerchief clip. 4,417,370., Cl. 24-3.00L.

Li, Shiu Kang L., to CIP, Inc. Wet compaction of low density air laid webs after binder application. 4,417,931., Cl. 156-62.200.

Liaskar, Jermund: *See—*
Bakke, Jan; and Liaskar, Jermund, 4,418,230., Cl. 568-940.000.

Lidorenko, Nikolai S.; Afian, Viktor V.; Vartanian, Albert V.; Martirosian, Ruben G.; Ryabikov, Stanislav V.; and Strebkov, Dmitry S. Photoelectric solar cell array. 4,418,238., Cl. 136-246.000.

Lin, David C. K., to Owens-Corning Fiberglas Corporation. Composite roofing panel. 4,418,108., Cl. 428-139.000.

Lin, Yng-Lang. Portable carton box sealer without touching the tape by hand. 4,417,941., Cl. 156-475.000.

Lindberg, John E., to U.S.A. 161 Developments Ltd. Combustion control system and improved elements therefor. 4,417,548., Cl. 123-25.00E.

Lindbergh, Charles. Counterweight system. 4,417,646., Cl. 187-94.000.

Lindgren, Peter: *See—*
Hood, Robert A.; and Lindgren, Peter, 4,417,414., Cl. 43-43.120.

Lindmark, Richard C.: *See—*
Bunnelle, William L.; and Lindmark, Richard C., 4,418,123., Cl. 428-517.000.

Lindner, Walter E.; and Malakelis, Elias, to McDonnell Douglas Corporation. Enhanced aluminum etchant. 4,417,949., Cl. 156-665.000.

Lindors, Sven G., to Oy Lohja Ab. Electroluminescence structure. 4,418,118., Cl. 428-336.000.

Lips, Alexander; Wells, Martin A.; and Willis, Edwin, to Lever Brothers Company. Fabric conditioning composition. 4,417,995., Cl. 252-174.230.

Litton Systems, Inc.: *See—*
Doliber, Darrel, 4,417,814., Cl. 356-252.000.

Liu, Chunghorng R. Method and apparatus for machining a workpiece by varying the tool geometry. 4,417,489., Cl. 82-1.00C.

Lo, David S.: *See—*
Cosimini, Gregory J.; Lo, David S.; and Paul, Maynard C., 4,418,400., Cl. 365-87.000.

Loberg, Michael: *See—*
Nunn, Adrian; and Loberg, Michael, 4,418,208., Cl. 562-449.000.

Lockwood, George H., to Anthony Manufacturing Corp. Turbine drive water sprinkler. 4,417,691., Cl. 239-206.000.

Logullo, Francis M., Sr.; and Wu, Yun-Tai, to Du Pont de Nemours, E. I., and Company. Aramid fiber coated with polyfunctional aziridine. 4,418,164., Cl. 523-207.000.

Lohberg, Peter, to Battelle Institut e.V. Automatic weighing method and device. 4,417,632., Cl. 177-212.000.

Loikitz, Frank F., to Standard Keil Hardware Manufacturing Co. Direct drive positive locking panel fastener. 4,417,430., Cl. 52-584.000.

Lone Star Steel Company: *See—*
Heine, Christian H., Jr.; McGaw, Robert W.; Wetzel, W. Edwin, Jr.; and Ziegler, Joseph, 4,417,928., Cl. 148-144.000.

Lonza Ltd.: *See—*
Perlberger, Jean-Claude, 4,418,020., Cl. 260-544.00Y.

Lopacki, John B.; and Emes, Harry R., to Kennecott Corporation. Method of terminating carbon ceramic composition resistors for use in high peak power and peak voltage energy dissipation application. 4,417,389., Cl. 29-619.000.

Lorant, Stefan, to Kommanditbolaget United Stirling (Sweden) A.B. & Co. Multi-cylinder, double-acting hot gas engine. 4,417,443., Cl. 60-525.000.

Lowitz, Joachim: *See—*
Arndt, Peter J.; Lowitz, Joachim; Muller, Manfred; and Schlosser, Fritz, 4,418,204., Cl. 549-539.000.

Lu, Phong, to Luk Lamellen und Kupplungsbau GmbH. Balanced friction clutch system and method of making same. 4,417,651., Cl. 192-89.00B.

Lubrizol Corporation, The: *See—*
Clason, Donald L.; and Schroeck, Calvin W., 4,417,990., Cl. 252-32.70E.

Lucas Industries Limited: *See—*
Cotter, Edmund; Whatley, Francis; and Baum, Heinz W., 4,417,647., Cl. 188-73.380.

Luk Lamellen und Kupplungsbau GmbH: *See—*
Lu, Phong, 4,417,651., Cl. 192-89.00B.

Lund, Wesley C., to Boeing Company, The. Apparatus for forming shaped edges. 4,417,835., Cl. 409-180.000.

Lundholm, Gunnar, to Mechanical Technology Incorporated. Stirling cycle engine. 4,417,444., Cl. 60-525.000.

Lungershausen, Rolf; Martin, Christoph; Marcinowski, Stefan; Siegel, Hardo; and Kuesters, Werner, to BASF Aktiengesellschaft. Preparation of D-N-carbamyl-α-aminoacids and micro-organisms for carrying out this preparation. 4,418,146., Cl. 435-106.000.

Lutke, Hubertus: *See—*
Grosser, Heinrich; Dierkes, Hermann; Lutke, Hubertus; and Schreckenberg, Klaus, 4,417,499., Cl. 89-36.00K.

Lutz, Harry O., to McDonnell Douglas Corporation. Explosive switch. 4,417,519., Cl. 102-263.000.

Lynch, Joseph A. Nondestructive dental cap removal methods. 4,417,876., Cl. 433-161.000.

M.A.N. Maschinenfabrik Augsburg-Nuremberg Aktiengesellschaft: *See—*
Kazenmaier, Ulrich; and Quast, Gunter, 4,417,549., Cl. 123-41.840.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Fischer, Hermann, 4,417,516., Cl. 101-181.000.

M.B.E. Minoterie Biscotterie d'Echenon: *See—*
Cantenot, Francois, 4,418,088., Cl. 426-549.000.

M & T Chemicals Inc.: *See—*
Gibbons, Ambrose J., Jr.; and Ringwood, Robert C., Jr., 4,418,169., Cl. 524-178.000.

Mac Engineering and Equipment Co., Inc.: *See—*
Simonton, Robert D., 4,417,390., Cl. 29-730.000.

MacAllister, Burton W., Jr.: *See—*
Palilla, Frank C.; MacAllister, Burton W., Jr.; and McKenna, John F., 4,418,327., Cl. 338-309.000.

Machanian, William V., to Wurlitzer Company, The. Velocity sensitive keyer control circuit for an electronic musical instrument. 4,417,496., Cl. 84-1.270.

Machinefabriek Joh² Aberson B. V.: *See—*
Hofs, Bernardus T., 4,417,979., Cl. 209-617.000.

Mackelburg, Gerald: *See—*
Gordon, Alan; Watson, Stanley J.; Cowen, Steven J.; Mackelburg, Gerald; and Castile, Brett D., 4,418,404., Cl. 367-132.000.

Madej, Edward A., to Robroy Industries. Pipe hanger. 4,417,711., Cl. 248-74.00R.

Maeda, Haruo: *See—*
Tsukiji, Yoshihiro; Maeda, Haruo; and Araki, Mikio, 4,417,486., Cl. 74-813.00R.

Maeda, Naoyuki: *See—*
Abe, Michio; and Maeda, Naoyuki, 4,417,640., Cl. 180-142.000.

Maeshiba, Sozaburo. Liquid level indicator in a cylindrical gasoline tank of the horizontal type. 4,418,340., Cl. 340-618.000.

Magnavox Government and Industrial Electronics Company: *See—*
Lee, Lawrence L., 4,417,543., Cl. 118-620.000.

Mahoney, Paul F.; and Bonn, Jerrold L., to Signatron, Inc. Signal processing product circuitry. 4,418,319., Cl. 328-160.000.

Maistrovich, Anthony R., to Minnesota Mining & Manufacturing Company. Imaging media capable of displaying sharp indicia. 4,418,098., Cl. 427-161.000.

Major, Jeffrey T., to Allied Corporation. Method of making a multiple open turn lap wound dynamoelectric machine. 4,417,388., Cl. 29-598.000.

Makino, Fusao: *See—*
Suzuki, Hitoshi; and Makino, Fusao, 4,418,298., Cl. 318-341.000.

Malakelis, Elias: *See—*
Lindner, Walter E.; and Malakelis, Elias, 4,417,949., Cl. 156-665.000.

Mallinckrodt, Inc.: *See—*
White, Carl R., 4,418,229., Cl. 568-938.000.

Mangiavacchi, Andrea: *See—*
Abbott, Philip A.; Dailey, James E.; Karsan, Demir I.; and Mangiavacchi, Andrea, 4,417,831., Cl. 405-227.000.

Manning, Lindley: *See—*
Case, James E.; Ruppert, Richard L.; and Manning, Lindley, 4,417,425., Cl. 52-125.500.

Mansfield Carbon Products Inc.: *See—*
Vining, Paul H.; and Smith, Jimmy B., 4,417,528., Cl. 110-229.000.

Manufacturers Supplies Co.: *See—*
Goellner, Robert F., 4,417,458., Cl. 69-13.000.

Mapco, Inc.: *See—*
Zacharias, Ellis M., Jr., 4,417,480., Cl. 73-861.180.

Marathon Electric Manufacturing Corporation: *See—*
Keglewitsch, Josef, 4,417,373., Cl. 24-458.000.

Marchetto, Albert V.: *See—*
Halvorsen, Henry J.; Marchetto, Albert V.; and Thomas, Edwin P., 4,417,778., Cl. 339-17.00M.

Marcinowski, Stefan: *See—*
Lungershausen, Rolf; Martin, Christoph; Marcinowski, Stefan; Siegel, Hardo; and Kuesters, Werner, 4,418,146., Cl. 435-106.000.

Marconi Company Limited, The: *See—*
Glasgow, John A., 4,418,360., Cl. 358-108.000.

Marcus, Konrad H.; and Watjer, Sheldon J., to Prince Corporation. Automotive armrest assembly. 4,417,764., Cl. 297-194.000.

Marin, Heiner: *See—*
Hess, Ruediger; and Marin, Heiner, 4,418,255., Cl. 200-147.00A.

Marino, Richard P.; Rothamel, Richard J.; and Rieken, William C., to General Foods Corporation. Expanded textured protein product and method for making same. 4,418,086., Cl. 426-302.000.

Mariol, James F. Rideable motor-driven toy train. 4,417,523., Cl. 105-1.00T.

Markle, Stephen L.: *See—*
Hartman, Peter W.; Hanford, Keith E.; Markle, Stephen L.; and Hartman, Elmer C., 4,418,251., Cl. 191-35.000.

Marsh Industries, Inc.: *See—*
Marsh, Richard B., 4,417,420., Cl. 49-482.000.

Marsh, Richard B., to Marsh Industries, Inc. Door seal. 4,417,420., Cl. 49-482.000.

Marshall, Patrick J., to L & R Manufacturing Company. Oscillatory resonant transducer driver circuit. 4,418,297., Cl. 310-316.000.

Martin, Christoph: *See—*
Lungershausen, Rolf; Martin, Christoph; Marcinowski, Stefan; Siegel, Hardo; and Kuesters, Werner, 4,418,146., Cl. 435-106.000.

Martin, Liesel, geb. Boser. Device for mounting diapositives in a strip and an apparatus for projecting the strip-mounted diapositives. 4,417,792., Cl. 353-120.000.

Martin Marietta Corporation: *See*—
Misra, Mohan S., 4,418,097., Cl. 427-113.000.

Martinez, Felix J.: *See*—
Cosentino, Louis C.; and Martinez, Felix J., 4,417,888., Cl. 604-175.000.

Martirosian, Ruben G.: *See*—
Lidorenko, Nikolai S.; Afian, Viktor V.; Vartanian, Albert V.; Martirosian, Ruben G.; Ryabikov, Stanislav V.; and Strebkov, Dmitry S., 4,418,238., Cl. 136-246.000.

Marui Industry Co., Ltd.: *See*—
Miyagishima, Naoki; and Nakagawa, Shigeru, 4,417,411., Cl. 40-443.000.

Marulic, Walter J.; and Johnson, Kent N., to United-American Car Co. Gondola car construction. 4,417,526., Cl. 105-406.00R.

Maruyama, Keizo: *See*—
Sato, Takahisa; Maruyama, Keizo; and Sano, Kunio, 4,418,045., Cl. 423-245.000.

Maruyama, Toshinori: *See*—
Torii, Koshi; Maruyama, Toshinori; Akita, Yoshio; and Teshima, Takanori, 4,418,311., Cl. 320-48.000.

Maschinenfabrik Buckau R. Wolf Aktiengesellschaft: *See*—
Becker, Anton, 4,417,773., Cl. 308-178.000.

Maschinenfabrik J. Dieffenbacher GmbH Co.: *See*—
Pfeiffer, Heinrich, 4,417,865., Cl. 425-371.000.

Masillo, Guido. Slide rule - calendar. 4,418,274., Cl. 235-85.00R.

Mason, James J., to Cameo Container Corporation. Carton for packaging lamp shades or the like. 4,417,660., Cl. 206-500.000.

Masse', Lucien: *See*—
Medlin, William L.; Masse', Lucien; and Zumwalt, Gary L., 4,417,621., Cl. 166-249.000.

Massey, Edward W.: *See*—
Deibel, Christopher J.; and Massey, Edward W., 4,417,509., Cl. 99-467.000.

Massoud, Ebrahim, to National Research Development Corporation. Method of moulding a ceramic article by slip-casting. 4,418,027., Cl. 264-24.000.

Masuda, Yutaka: *See*—
Kiyomura, Yoshiteru; Masuda, Yutaka; and Kojima, Tatsuji, 4,418,104., Cl. 428-15.000.

Mathis, Ronald D.: *See*—
Reed, Jerry O.; and Mathis, Ronald D., 4,418,029., Cl. 264-211.000.

Mathis, Terry D., to Koss Corporation. Dual element headphone. 4,418,248., Cl. 179-156.00R.

Matsuda, Hisashi, to Jeol Ltd. Double focusing mass spectrometer. 4,418,280., Cl. 250-296.000.

Matsuda, Minoru; Kato, Kentaro; and Suzuki, Masatoshi, to Honda Giken Kogyo Kabushiki Kaisha. Supercharger apparatus for internal combustion engine. 4,417,559., Cl. 123-559.000.

Matsuda, Mutsuhide: *See*—
Tamura, Shuichi; Suzuki, Toyotosi; Tamamura, Hideo; and Matsuda, Mutsuhide, 4,417,795., Cl. 354-25.000.

Matsuda, Shohei: *See*—
Satoh, Makoto; Miyakawa, Yoshitaka; Fujii, Etsuo; and Matsuda, Shohei, 4,417,768., Cl. 303-113.000.

Matsuda, Susumu; Matsukura, Nobuaki; Suzuki, Masataka; and Narushima, Tsugio, to Tokyo Electric Co., Ltd. Printer with moveable paper strip guide rolls. 4,417,517., Cl. 101-288.000.

Matsui, Hideo: *See*—
Kitamura, Minoru; Koyama, Shinji; Ito, Shuzo; Ohgami, Masahiko; Matsui, Hideo; Hirose, Isamu; Fujimoto, Hideaki; and Yasui, Tsuyoshi, 4,417,723., Cl. 266-265.000.

Matsui, Takahiro, to Kabushiki Kaisha Morita Seisakusho. Foot controller for dental instrument. 4,417,875., Cl. 433-101.000.

Matsukura, Nobuaki: *See*—
Matsuda, Susumu; Matsukura, Nobuaki; Suzuki, Masataka; and Narushima, Tsugio, 4,417,517., Cl. 101-288.000.

Matsumoto, Toshiaki: *See*—
Oyokota, Shigeru; Taniguchi, Nobuyuki; Hoda, Takeo; Tanii, Junichi; Seigenji, Kiyoshi; and Matsumoto, Toshiaki, 4,417,793., Cl. 354-21.000.

Matsumoto, Yoshio: *See*—
Tarumi, Mitio; Tokitsu, Tetsuya; and Matsumoto, Yoshio, 4,417,871., Cl. 432-1.000.

Matsushima, Noriaki; Saeki, Yukio; and Tokunaga, Yukio, to Sumitomo Durez Company, Ltd. Resin coated sand and method for producing same. 4,418,161., Cl. 523-145.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Kawamoto, Noriyuki; Higashi, Toru; and Kajita, Harumasa, 4,418,424., Cl. 455-4.000.
Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,418,284., Cl. 250-578.000.

Matsushita Electric Works, Ltd.: *See*—
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Matsuzawa, Masamitsu: *See*—
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Maudal, Inge, to General Dynamics, Pomona Division. Sequential time discrimination system for sub-delivery systems. 4,417,520., Cl. 102-489.000.

Maurer, Fritz; Hammann, Ingeborg; Homeyer, Bernhard; and Behrenz, Wolfgang, to Bayer Aktiengesellschaft. Combating pests with N-acylated N-methyl-carbamic acid O-pyrazol-4-yl esters. 4,418,073., Cl. 424-273.00P.

Maurer, Jack R., to Allegheny Ludlum Steel Corporation. Welded ferritic stainless steel article. 4,417,921., Cl. 75-125.000.

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Wolfrum, Jurgen; Knebs, Michael; and Clough, Peter N., 4,417,964., Cl. 204-158.00R.

May, David C.; and Bailey, Terry R., to Minnesota Mining and Manufacturing. Vapor-permeable retroreflective sheeting. 4,418,110., Cl. 428-143.000.

Mayne-Banton, Veronica I.; and Srinivasan, Rangaswamy, to International Business Machines Corporation. Self developing, photoetching of polyesters by far UV radiation. 4,417,948., Cl. 156-643.000.

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McAdams, Ronald R., to McAdams Manufacturing Co., Inc. System for producing a bitumen laminate. 4,417,939., Cl. 156-282.000.

McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, to Texas Instruments Incorporated. High performance dynamic sense amplifier with multiple column outputs. 4,418,293., Cl. 307-530.000.

McAlpine, James B.; and Carney, Ronald E., to Abbott Laboratories. Method of producing 2-epi-fortimicin A. 4,418,193., Cl. 536-16.100.

McCandlish, Larry E.; and Kugler, Edwin L., to Exxon Research and Engineering Co. CO Hydrogenation process using molybdenum oxycarbonitride catalyst. 4,418,154., Cl. 518-714.000.

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McCartney, Charles P., Jr.; and Wheadon, Ellis G., to General Motors Corporation. Method of making a lead-acid storage battery plate. 4,417,608., Cl. 141-1.100.

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McCoy, Ewald H., to Electrochemical Products, Inc. Alkaline plating baths and electroplating process. 4,417,956., Cl. 204-44.000.

McCracken, Oliver W.; and Bostock, James H., to Otis Engineering Corporation. Electronic temperature sensor. 4,417,470., Cl. 73-154.000.

McCracken, William G., Jr.: *See*—
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McDonnell Douglas Corporation: *See*—
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McNealy, Richard C.; and Cravens, Charles F., to Halliburton Company. Method for heat treating metal. 4,418,258., Cl. 219-10.410.

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Merrell Dow Pharmaceuticals Inc.: *See—*
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Morris, Joseph H., to United States of America, Navy. Variable geometry centrifugal pump. 4,417,849., Cl. 415-131.000.
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Hager, Robert E.; and Moss, Laurence H., 4,418,279., Cl. 250-201.000.
Moss Rosenberg Verft A/S: *See*—
Koren, Stein, 4,417,878., Cl. 440-3.000.
Mostek Corporation: *See*—
O'Toole, James E.; and Proebsting, Robert J., 4,418,403., Cl. 365-201.000.
Mosure, Duane C.: *See*—
Cygnor, John E.; Whitesel, Terry L.; and Mosure, Duane C., 4,417,851., Cl. 415-150.000.
Motor Wheel Corporation: *See*—
Smith, Richard W.; and Waugaman, William J., 4,417,766., Cl. 301-55.000.
Motoren-und Turbinen-Union Friedrichshafen GmbH: *See*—
Deutschmann, Herbert; and Kamleitner, Ewald, 4,417,555., Cl. 123-372.000.
Dinger, Hans, 4,417,554., Cl. 123-357.000.
Motorola, Inc.: *See*—
Davis, Earl K.; Landron, Rafael; and Taylor, Scot W., 4,417,913., Cl. 65-59.100.
Higgins, Robert J., 4,418,324., Cl. 333-204.000.
Motoyama, Kazuyasu, to Olympus Optical Co., Ltd. Connection terminal device for electrical implements. 4,417,776., Cl. 339-17.00F.
MTU Motoren-Und-Turbinen-Union Friedrichshafen GmbH: *See*—
Heisler, Kurt, 4,417,735., Cl. 277-101.000.
Muench, Volker; Naarmann, Herbert; and Penzien, Klaus, to BASF Aktiengesellschaft. Preparation of electrically conductive polymers. 4,418,187., Cl. 526-259.000.
Muetgeert, Johannes; Otto, Petrus H. L.; and Flippo, Frans A., to Organisatie Voor Toegepast-Natuurwetenschappelijk Onderzoek Ten Behoeve Van Nijverheid, Handel En Verkeer. Enzyme immobilization in a starch gel. 4,418,147., Cl. 435-178.000.
Muetterties, Andrew J.: *See*—
Genese, Joseph N.; and Muetterties, Andrew J., 4,417,577., Cl. 604-81.000.
Muhler, Joseph C.; and Putt, Mark S., to Indiana University Foundation. Dental prophylaxis compositions and their use. 4,418,053., Cl. 424-52.000.
Muller, Ernst-Willi; and Rathjen, Claus, to Bayer Aktiengesellschaft. Process for the production of granulates of organic substances present in the form of a melt. 4,418,030., Cl. 264-142.000.
Muller, Friedhelm: *See*—
Probst, Joachim; Kolb, Gunter; Muller, Friedhelm; and Baumgen, Heinz, 4,418,175., Cl. 524-555.000.
Muller, Gunter: *See*—
Bohrmann, Hans; Campbell, Thomas; Grigoteit, Werner; and Muller, Gunter, 4,418,090., Cl. 426-578.000.
Muller, Manfred: *See*—
Arndt, Peter J.; Lowitz, Joachim; Muller, Manfred; and Schlosser, Fritz, 4,418,204., Cl. 549-539.000.
Muller, Michael; and Butts, Gary C., to Keyboard Company, The. Keyboard switch. 4,418,257., Cl. 200-159.00B.
Mumola, Joanne L.: *See*—
Demke, Kent R.; and Mumola, Joanne L., 4,418,345., Cl. 340-731.000.
Munshaw, Harold A. Soldering iron holder with ready indicator and safety shutoff. 4,418,268., Cl. 219-242.000.

Murakami, Tetsuo; Miyazaki, Hirotoshi; and Harima, Hiroshi, to Kuraray Co., Ltd. Water absorbing composite comprising inorganic powder encapsulated with a crosslinked carboxyl polymer. 4,418,163., Cl. 523-205.000.

Muralidhara, Ranya: *See*—
Pittet, Alan O.; Muralidhara, Ranya; and Hagedorn, Myrna L., 4,418,087., Cl. 426-536.000.

Murao, Yasuo: *See*—
Hosaka, Shuntaro; Murao, Yasuo; and Kawabata, Yasuro, 4,418,152., Cl. 436-511.000.

Muraoka, Akihiko: *See*—
Suzuki, Kunihiko; and Muraoka, Akihiko, 4,417,642., Cl. 180-249.000.

Murasaki, Hiroshi, to Minolta Camera Kabushiki Kaisha. Cleaning apparatus. 4,417,365., Cl. 15-256.510.

Murdock, Keith C., to American Cyanamid Company. Method of treating tumors in warm-blooded animals. 4,418,078., Cl. 424-330.000.

Murray, Edward D.; Woodman, Brenda J.; Maurice, Terrence J.; and Sirett, Robert R., to General Foods Inc. Neutral protein beverage. 4,418,084., Cl. 426-250.000.

Murray, Robert T.; and Bradley, Daniel J., to Imperial Chemical Industries PLC. Measuring apparatus. 4,417,815., Cl. 356-349.000.

Museki, Katsuo, to Kabushiki Kaisha Daini Seikosha. Watchband formed of tubular metal rods and method of manufacturing same. 4,417,437., Cl. 59-20.000.

Muterspaugh, Max W., to RCA Corporation. Tuning system for a multi-band television receiver. 4,418,427., Cl. 455-180.000.

Myers, Chester D.: *See*—
Cameron, Jacquelyn J.; and Myers, Chester D., 4,418,013., Cl. 260-123.500.

Myers, George D., deceased (by Myers, Virginia K., administratrix); and Busch, Lloyd E., to Ashland Oil, Inc. Addition of water to regeneration air. 4,417,975., Cl. 208-120.000.

Myers, Virginia K., administratrix: *See*—
Myers, George D., deceased; and Busch, Lloyd E., 4,417,975., Cl. 208-120.000.

Naarmann, Herbert: *See*—
Muench, Volker; Naarmann, Herbert; and Penzien, Klaus, 4,418,187., Cl. 526-259.000.

Nabisco, Inc.: *See*—
Pinto, Albert A.; and Ryder, George, 4,417,837., Cl. 414-104.000.

Nadler, Morton. Method and device for image analysis. 4,418,362., Cl. 358-293.000.

Nagai, Kiichirou; and Okamoto, Takashi, to Pioneer Electronic Corporation. Magnetic tape setting device for use in magnetic tape recording and/or reproducing apparatus. 4,418,367., Cl. 360-75.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Voltage comparator. 4,418,290., Cl. 307-355.000.

Nagle, William J.: *See*—
Soltis, Daniel G.; Sheibley, Dean W.; and Nagle, William J., 4,418,130., Cl. 429-206.000.

Nakabayashi, Masamitsu: *See*—
Doura, Fumihiro; Nakabayashi, Masamitsu; and Morimoto, Taiji, 4,418,177., Cl. 525-57.000.

Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, to Nippon Gakki Seizo Kabushiki Kaisha. Automatic performing apparatus of electronic musical instrument. 4,417,494., Cl. 84-1.030.

Nakagawa, Shigeru: *See*—
Miyagishima, Naoki; and Nakagawa, Shigeru, 4,417,411., Cl. 40-443.000.

Nakahara, Syunichi: *See*—
Sugiura, Yoji; Hagiwara, Toshio; Okumura, Toru; and Nakahara, Syunichi, 4,417,796., Cl. 354-152.000.

Nakahara, Yutaka; Kubota, Naohiro; Hirai, Bunji; and Haruna, Tohru, to Adeka Argus Chemical Co., Ltd. Process for preparing triacetone amine. 4,418,196., Cl. 546-242.000.

Nakai, Masaaki; and Sahara, Masayoshi, to Minolta Camera Kabushiki Kaisha. Automatic diaphragm control camera. 4,417,794., Cl. 354-38.000.

Nakajima, Toshi: *See*—
Yamaji, Tadao; Nakajima, Toshi; and Kashi, Takeshi, 4,417,754., Cl. 285-104.000.

Nakakuki, Teruo: *See*—
Okada, Minoru; Matsuzawa, Masamitsu; Uezima, Osamu; Nakakuki, Teruo; and Horikoshi, Koki, 4,418,144., Cl. 435-96.000.

Nakamoto, Yasunobu; and Terayama, Toshiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Combination power plant. 4,417,446., Cl. 60-641.700.

Nakamura, Haruo, to Kabushiki Kaisha Suwa Seikosha. Liquid crystal display with negative timing signal and dielectric inversion. 4,417,785., Cl. 350-346.000.

Nakamura, Kazumasa: *See*—
Yasuda, Keiichi; Ori, Takaaki; and Nakamura, Kazumasa, 4,417,468., Cl. 73-118.000.

Nakamura, Ken: *See*—
Yamazaki, Yoshio; Nakamura, Ken; and Inowa, Shigeru, 4,417,807., Cl. 355-15.000.

Nakamura, Shigeru; Ueki, Yoshihiko; and Takachi, Hiroshi, to Toshiba Heating Appliances Co., Ltd. Liquid fuel combustion apparatus. 4,417,870., Cl. 431-33.000.

Nakane, Masami; Reid, Joyce; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane hydrazone prostaglandin analogs useful in treating thrombolytic diseases. 4,418,076., Cl. 424-285.000.

Nakanishi, Kyoji; Nozaki, Tsutomu; and Emi, Toshihiko, to Kawasaki Steel Corporation. Top-and-bottom blown converter. 4,417,719., Cl. 266-78.000.

Nakano, Jiro: *See*—
Imai, Yutaka; Nakano, Jiro; and Ezaki, Motoharu, 4,418,288., Cl. 307-117.000.

Nakatani, Kiyoshi: *See*—
Numata, Satoshi; Nakatani, Kiyoshi; Yamazaki, Noboro; and Yuasa, Teruo, 4,418,220., Cl. 568-734.000.

Nalco Chemical Company: *See*—
Bhattacharyya, Bhupati R.; and Roe, William J., 4,417,992., Cl. 252-88.000.

Nalley, Robert E.; and Shenfield, Leonard R., to Disctron, Inc. Method and apparatus for positioning a transducer using embedded servo track encoding. 4,418,368., Cl. 360-78.000.

Napflin, Hans. Ski binding with step-in frame. 4,417,749., Cl. 280-614.000.

Naramoto, Satoru: *See*—
Kassi, Yutaka; and Naramoto, Satoru, 4,417,827., Cl. 401-68.000.

Narushima, Tsugio: *See*—
Matsuda, Susumu; Matsukura, Nobuaki; Suzuki, Masataka; and Narushima, Tsugio, 4,417,517., Cl. 101-288.000.

Nash, Donald H.: *See*—
Lese, Gregory; and Nash, Donald H., 4,418,416., Cl. 375-5.000.

Nat, Gursharan P. S.: *See*—
Busby, Robert A.; Nat, Gursharan P. S.; and Stearley, John W., 4,418,254., Cl. 200-68.300.

Nation Enterprises, Inc.: *See*—
Bauer, Marshall, 4,417,867., Cl. 425-394.000.

National Distillers and Chemical Corporation: *See*—
Hanes, Ronnie M.; and Prampton, Orville D., 4,418,219., Cl. 568-697.000.
Tomita, Nobuya, 4,417,459., Cl. 72-56.000.

National Foam Systems, Inc.: *See*—
Bennett, Robert W., 4,417,601., Cl. 137-556.600.

National Research Development Corporation: *See*—
Massoud, Ebrahim, 4,418,027., Cl. 264-24.000.

National Seating Co.: *See*—
Edwards, Robert L., 4,417,715., Cl. 248-425.000.

Nauerth, Karl-Heinz: *See*—
Roller, Hanno; and Nauerth, Karl-Heinz, 4,418,272., Cl. 219-541.000.

Nautilus Crane & Equipment Corporation: *See*—
Gordon, John C., 4,417,664., Cl. 212-192.000.

NCR Corporation: *See*—
Oosterbaan, DuWayne D.; and Williams, Gerard J., 4,418,275., Cl. 377-33.000.
Reece, John W., 4,418,356., Cl. 346-140.00R.
Thomas, Jacob E., 4,418,353., Cl. 346-140.00R.

Negri, Rosario O., to Grumman Aerospace Corporation. Interchangeable wing aircraft. 4,417,708., Cl. 244-45.00R.

Nehmiz, Peter: *See*—
Bohlen, Harald; Engelke, Helmut; Greschner, Johann; and Nehmiz, Peter, 4,417,946., Cl. 156-643.000.

Nelson, Carl L.; Haynes, Darrel W.; and Weber, Michael J. Prosthetic cement spacer and method for using same. 4,417,571., Cl. 128-92.00B.

Nelson, Paul E., to Boeing Company, The. Ram assembly for electromagnetic riveter. 4,417,463., Cl. 72-430.000.

Nemeskeri, Georg, to G.N. Plastics Company Limited. Method for producing a container. 4,418,034., Cl. 264-522.000.

Nerone, Louis R.: *See*—
Finet, Alain; and Nerone, Louis R., 4,418,389., Cl. 364-478.000.

Nichols, Bruce A.: *See*—
Cundy, Steven L.; Evans, Ronald A.; Johnson, Oliver S.; McCormack, John S.; and Nichols, Bruce A., 4,417,911., Cl. 65-3.120.

Nicholson, David W.; Smith, Larry G.; Dinius, Harold B.; and Oberle, Ronald R., to Eli Lilly and Company. Vial inspection machine. 4,417,662., Cl. 209-522.000.

Nicklaus, Helen C. Stringed musical instrument teaching device and process. 4,417,497., Cl. 84-485.00R.

Nicolon B.V.: *See*—
de Winter, Jan G., 4,417,828., Cl. 405-17.000.

Niemerg, Willi: *See*—
Kohlstette, Werner; and Niemerg, Willi, 4,417,885., Cl. 494-23.000.

Nieto, Alfonso, Jr., to United States of America, Army. High impedance fast voltage probe. 4,418,314., Cl. 324-72.500.

Nihon Shokuhin Kako Co., Ltd.: *See*—
Okada, Minoru; Matsuzawa, Masamitsu; Uezima, Osamu; Nakakuki, Teruo; and Horikoshi, Koki, 4,418,144., Cl. 435-96.000.

Niihara, Toshio: *See*—
Imai, Eiji; Michiura, Yoshiharu; and Niihara, Toshio, 4,417,762., Cl. 296-210.000.

Nippon Electric Co. Ltd.: *See*—
Tsuji, Yoshitake; Mori, Nobuhiko; and Egami, Kazunari, 4,418,423., Cl. 382-40.000.

Nippon Gakki Seizo Kabushiki Kaisha: *See*—
Nakada, Akira; Okan..to, Eisaku; and Yoshida, Kiyoshi, 4,417,494., Cl. 84-1.030.

Nippon Kokan Kabushiki Kaisha: *See*—
Ohuchi, Chiaki; Kohsaka, Yoji; and Suenaga, Hiroyoshi, 4,417,493., Cl. 83-15.000.

Nippon Shokubai Kagaku Kogyo Co., Ltd.: *See*—
Sato, Takahisa; Maruyama, Keizo; and Sano, Kunio, 4,418,045., Cl. 423-245.000.

Nippon Soken, Inc.: *See*—
Kawai, Hisasi; Egami, Tsuneyuki; Kohama, Tokio; and Obayashi, Hideki, 4,417,471., Cl. 73-204.000.
Kobayashi, Akihiro; Kida, Masashi; Ito, Novuei; and Kato, Yoji, 4,417,550., Cl. 123-145.00A.
Tanaka, Hiroaki; and Akita, Shigeyuki, 4,418,347., Cl. 340-870.370.
Tanaka, Hiroaki; and Akita, Sigeyuki, 4,418,348., Cl. 340-870.370.

Nippondenso Company Limited: *See*—
Imai, Yutaka; Nakano, Jiro; and Ezaki, Motoharu, 4,418,288., Cl. 307-117.000.
Shiga, Tsutomu, 4,418,295., Cl. 310-59.000.
Torii, Koshi; Maruyama, Toshinori; Akita, Yoshio; and Teshima, Takanori, 4,418,311., Cl. 320-48.000.
Yasuda, Keiichi; Ori, Takaaki; and Nakamura, Kazumasa, 4,417,468., Cl. 73-118.000.
Yoshimi, Akira; Kamiya, Michihiko; and Moriya, Mitsutoshi, 4,417,618., Cl. 165-12.000.

Nishikawa, Shigeru: *See*—
Aisaka, Noboru; Nishikawa, Shigeru; Shibuya, Atsuo; Bessho, Yasuo; Akami, Hitoshi; and Ogawa, Shigeo, 4,417,401., Cl. 33-175.000.

Nishimura, Fuminobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Developing device. 4,417,544., Cl. 118-688.000.

Nishimura, Tatsuo: *See*—
Mifune, Hiroyuki; Ishiguro, Shoji; Shishido, Tadao; and Nishimura, Tatsuo, 4,418,140., Cl. 430-351.000.

Niskin, Shale J. Counter balanced sheave assembly with multiple pulleys. 4,417,718., Cl. 254-394.000.

Nissan Motor Co., Ltd.: *See*—
Imai, Eiji; Michiura, Yoshiharu; and Niihara, Toshio, 4,417,762., Cl. 296-210.000.
Suzuki, Kunihiko; and Muraoka, Akihiko, 4,417,642., Cl. 180-249.000.
Tamura, Takeo, 4,418,377., Cl. 362-19.000.
Yasuhara, Seishi, 4,417,561., Cl. 123-575.000.

Nitta, Kazunari: *See*—
Kuroda, Kazuyuki; Ikematsu, Riyoiti; and Nitta, Kazunari, 4,418,018., Cl. 260-465.700.

Nitto Kohki Co., Ltd.: *See*—
Nozawa, Nobuyuki; and Mikiya, Toshio, 4,417,568., Cl. 128-33.000.

Noda, Tominitsu, to Tokyo Shibaura Denki Kabushiki Kaisha. Programmable microwave oven with program display. 4,418,262., Cl. 219-10.55B.

Noe, Renato R.; and Catapano, Michael C. Portable test unit, for high pressure testing of tubes. 4,417,465., Cl. 73-49.500.

Nonoyama, Nobuo: *See*—
Kawasaki, Kikuo; Yoshida, Kazuo; Nonoyama, Nobuo; Yamaguchi, Toshibumi; Hasegawa, Toshio; and Okamura, Jitsuo, 4,417,671., Cl. 222-56.000.

Nordson Corporation: *See*—
Lee, Cleve L., 4,417,432., Cl. 53-77.000.

Nordstrom, Anders: *See*—
Hay, Eric; and Nordstrom, Anders, 4,417,728., Cl. 273-29.00A.

Norris, Kenneth E. Towelsheet disposable diaper. 4,417,894., Cl. 604-385.000.

Norris, Robert D.: *See*—
Brown, Richard A.; Byers, Lance R.; and Norris, Robert D., 4,418,051., Cl. 423-592.000.

Northern Telecom Limited: *See*—
Johnston, Harold; Lask, Zygmunt; and Gill, Frederick H., 4,417,781., Cl. 339-198.00J.

Notzel, Joachim; Schatz, Anton; Buczek, Harthmuth; and Kirchhof, Gunther, to Agfa-Gevaert Aktiengesellschaft. Pattern scanning device for copying machines. 4,417,809., Cl. 355-46.000.

Novak, Robert W.: *See*—
Trenbeath, Steven L.; Novak, Robert W.; and Feldman, Allan M., 4,418,047., Cl. 423-265.000.

Noyes, Steven S.: *See*—
Holtey, Thomas O.; Kelly, Richard P.; Noyes, Steven S.; and Raymond, James C., 4,418,384., Cl. 364-200.000.

Nozaki, Tsutomu: *See*—
Nakanishi, Kyoji; Nozaki, Tsutomu; and Emi, Toshihiko, 4,417,719., Cl. 266-78.000.

Nozawa, Nobuyuki; and Mikiya, Toshio, to Nitto Kohki Co., Ltd. Air bubble generating apparatus for use in bathtub. 4,417,568., Cl. 128-33.000.

Nugent, Edward L., to Becton, Dickinson and Company. Blood phase separator device. 4,417,981., Cl. 210-209.000.

Nuitoni Foods Corporation: *See*—
Becquelet, Louis E., 4,418,085., Cl. 426-297.000.

Numata, Satoshi; Nakatani, Kiyoshi; Yamazaki, Noboro; and Yuasa, Teruo, to Mitsui Toatsu Chemicals Inc. Novel indene compound and novel process for producing indene compounds. 4,418,220., Cl. 568-734.000.

Nunn, Adrian; and Loberg, Michael, to E. R. Squibb & Sons, Inc. N-Substituted iminodiacetic acids. 4,418,208., Cl. 562-449.000.

Nuovo Pignone S.p.A.: *See*—
Corain, Luciano, 4,417,606., Cl. 139-448.000.

O.G. Hoyer A/S: *See*—
Waldstrom, Ejvind; and Kaufmann, Gerhard, 4,417,610., Cl. 141-91.000.

Oak Industries Inc.: *See*—
Larson, Willis A.; and Van Zeeland, Anthony J., 4,418,239., Cl. 174-34.000.

Obayashi, Hideki: *See*—
Kawai, Hisasi; Egami, Tsuneyuki; Kohama, Tokio; and Obayashi, Hideki, 4,417,471., Cl. 73-204.000.

Ober, John W., to Hunter Investment Company. Solid state ignition system. 4,418,375., Cl. 361-253.000.

Oberhardt, Bruce J., to Miles Laboratories, Inc. Multilayer enzyme electrode membrane. 4,418,148., Cl. 435-179.000.

Oberle, Ronald R.: *See*—
Nicholson, David W.; Smith, Larry G.; Dinius, Harold B.; and Oberle, Ronald R., 4,417,662., Cl. 209-522.000.

Ogasawara, Masafumi: *See*—
Sano, Takao; Ogasawara, Masafumi; and Tsubakimori, Hiroshi, 4,417,375., Cl. 28-272.000.

Ogawa, Hiroshi, to Sony Corporation. Signal wave control circuit. 4,418,406., Cl. 369-124.000.

Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, to Matsushita Electric Industrial Co., Ltd. Solid-state color-image sensor and process for fabricating the same. 4,418,284., Cl. 250-578.000.

Ogawa, Shigeo: *See*—
Aisaka, Noboru; Nishikawa, Shigeru; Shibuya, Atsuo; Bessho, Yasuo; Akami, Hitoshi; and Ogawa, Shigeo, 4,417,401., Cl. 33-175.000.

Oguma, Kiyoshi: *See*—
Tamai, Masaharu; Morimoto, Shigeo; Adachi, Takashi; Oguma, Kiyoshi; Hanada, Kazunori; and Omura, Sadafumi, 4,418,075., Cl. 424-278.000.

Ohba, Yozo: *See*—
Toyoda, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, 4,418,112., Cl. 428-212.000.

Ohgami, Masahiko: *See*—
Kitamura, Minoru; Koyama, Shinji; Ito, Shuzo; Ohgami, Masahiko; Matsui, Hideo; Hirose, Isamu; Fujimoto, Hideaki; and Yasui, Tsuyoshi, 4,417,723., Cl. 266-265.000.

Ohkawa, Nobushisa; and Itoh, Hiroshi, to Toyota Jidosha Kogyo Kabushiki Kaisha. Method and apparatus for controlling the idling speed of an engine wherein the amount of air provided to the engine is increased by a predetermined amount when the engine speed becomes equal to zero. 4,417,553., Cl. 123-339.000.

Ohkura, Zenichi; and Haneishi, Yasuyuki, to Aoshi Kogaku Kogyo Kabushiki Kaisha. Data transmitting electrical contact means switching device in camera. 4,417,798., Cl. 354-271.000.

Ohno, John M., to General Electric Company. Process for production of silicon carbide composite. 4,417,906., Cl. 51-307.000.

Ohno, Yoshikata: *See*—
Tani, Masami; Esaki, Tamemaru; and Ohno, Yoshikata, 4,418,103., Cl. 428-4.000.

Ohnsmann, Klaus: *See*—
Weber, Otto; Ohnsmann, Klaus; and Christ, Ferdinand, 4,417,630., Cl. 177-1.000.

Ohuchi, Chiaki; Kohsaka, Yoji; and Suenaga, Hiroyoshi, to Nippon Kokan Kabushiki Kaisha. Method for cutting off steel plate. 4,417,493., Cl. 83-15.000.

Oishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic recording tape cassette. 4,417,704., Cl. 242-197.000.

Oji Yuka Goseishi Kabushiki Kaisha: *See*—
Toyoda, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, 4,418,112., Cl. 428-212.000.

Oka, Naoki: *See*—
Ando, Takashi; and Oka, Naoki, 4,417,901., Cl. 44-51.000.

Okada, Akio, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Two-speed timer. 4,418,253., Cl. 200-35.00R.

Okada, Minoru; Matsuzawa, Masamitsu; Uezima, Osamu; Nakakuki, Teruo; and Horikoshi, Koki, to Nihon Shokubin Kako Co., Ltd.; and Rikagaku Kenkyusho. Process for producing gamma-cyclodextrins. 4,418,144., Cl. 435-96.000.

Okafuji, Takayuki: *See*—
Abe, Fumiyoshi; and Okafuji, Takayuki, 4,418,303., Cl. 318-254.000.

Okamoto, Eisaku: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,417,494., Cl. 84-1.030.

Okamoto, Ichiro: *See*—
Kasuga, Takuzo; Toga, Yuzo; Okamoto, Ichiro; and Takahashi, Katsuhiko, 4,418,172., Cl. 524-292.000.

Okamoto, Takashi: *See*—
Nagai, Kiichirou; and Okamoto, Takashi, 4,418,367., Cl. 360-75.000.

Okamura, Jitsuo: *See*—
Kawasaki, Kikuo; Yoshida, Kazuo; Nonoyama, Nobuo; Yamaguchi, Toshibumi; Hasegawa, Toshio; and Okamura, Jitsuo, 4,417,671., Cl. 222-56.000.

Okazaki, Takahisa, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic diagnosing apparatus. 4,417,475., Cl. 73-606.000.

Oki Electric Industry Co., Ltd.: *See*—
Kobayashi, Masato; Hoshino, Yasushi; Tateishi, Kazuyoshi; Isobe, Minoru; Konishi, Hiroshi; Koga, Yoshitomo; and Hagiwara, Shigemi, 4,417,803., Cl. 355-3.0FU.

Oki, Toshikazu: *See*—
Tanaka, Hiroshi; Yoshioka, Takeo; Shimauchi, Yasutaka; Oki, Toshikazu; Ishikura, Tomoyuki; Takeuchi, Tomio; and Umezawa, Hamao, 4,418,192., Cl. 536-6.400.

Okonogi, Tsuneo; Fukatsu, Shunzo; Hachisu, Mitsugu; Kawashima, Hiroko; Shitoh, Keiko; and Sekizawa, Yasuharu, to Meiji Seika Kabushiki Kaisha. Cardiotonic agents. 4,418,070., Cl. 424-270.000.

Okumura, Takeo; and Imai, Miho, to Kao Soap Co., Ltd. Hairbrush. 4,417,595., Cl. 132-85.000.

Okumura, Toru: *See—*
Sugiura, Yoji; Hagiwara, Toshio; Okumura, Toru; and Nakahara, Syunichi, 4,417,796., Cl. 354-152.000.

Olin Corporation: *See—*
Kadija, Igor V.; Woodard, Kenneth E., Jr.; and Justice, David D., 4,417,959., Cl. 204-98.000.
Saeman, Walter C., 4,418,153., Cl. 501-29.000.

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Gaus, Hermann; Zaiser, Wolfgang; Pickard, Jurgen; and Eltze, Georg, 4,417,484., Cl. 74-688.000.

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Young, Ian R.; Hounsfield, Godfrey N.; and Burl, Michael, 4,418,316., Cl. 324-309.000.

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Johnson, Sigurd A., 4,418,378., Cl. 362-97.000.

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Marcus, Konrad H.; and Watjer, Sheldon J., 4,417,764., Cl. 297-194.000.

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Hilton, Joseph R.; and Wood, John D., 4,417,575., Cl. 128-206.190.

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Holtey, Thomas O.; Kelly, Richard P.; Noyes, Steven S.; and Raymond, James C., 4,418,384., Cl. 364-200.000.

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Barnette, William E.; and Jebens, Robert W., 4,418,405., Cl. 369-45.000.
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Knop, Karl H.; and Gale, Michael T., 4,417,784., Cl. 350-162.190.
Muterspaugh, Max W., 4,418,427., Cl. 455-180.000.
Taylor, Byron K., 4,418,408., Cl. 369-170.000.
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Reece, John W., to NCR Corporation. Ink jet print head. 4,418,356., Cl. 346-140.00R.

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Wallace, Duane W., 4,417,629., Cl. 175-365.000.

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Thepault, Yves, 4,417,635., Cl. 180-68.00R.

Reich Spezialmaschinen GmbH: *See—*
Abt, Anton; Dettelbach, Alfred; and Gresser, Gerhard, 4,417,675., Cl. 222-146.0HE.

Reid, Joyce: *See—*
Nakane, Masami; Reid, Joyce; and Haslanger, Martin F., 4,418,076., Cl. 424-285.000.

Renal Systems, Inc.: *See—*
Cosentino, Louis C.; and Martinez, Felix J., 4,417,888., Cl. 604-175.000.

Repa Feinstanzwerk GmbH: *See—*
Fohl, Artur, 4,417,702., Cl. 242-107.200.

Republic Steel Corporation: *See—*
Bedwell, Junion L.; and Overton, Harold C., 4,418,100., Cl. 427-348.000.

Retelsdorf, Hans-Joachim: *See—*
Hall, Fred W.; and Retelsdorf, Hans-Joachim, 4,417,922., Cl. 75-236.000.

Rexnord Inc.: *See—*
Rosan, Jose, Jr., 4,417,380., Cl. 29-148.40R.

RGG, Inc.: *See—*
Gordon, Marc J.; and Ruff, Stanley, 4,417,495., Cl. 83-175.000.

Rhone-Poulenc Agrochimie: *See—*
Cordier, Georges; and Fouilloux, Pierre, 4,418,213., Cl. 564-412.000.

Rhone-Poulenc Industries: *See—*
Derrien, Jean-Yves, 4,418,007., Cl. 502-312.000.

Riccar Company, Ltd.: *See—*
Doyama, Umeo, 4,417,531., Cl. 112-158.00E.

Rich Products Corporation: *See—*
Kahn, Marvin L.; and O'Mahony, John S., 4,418,082., Cl. 426-51.000.

Richter, Karl M.; Harder, Hans E.; and Behrens, Klaus, to Howmedica International, Inc. Aiming device for setting nails in bones. 4,418,422., Cl. 378-205.000.

Ricoh Company, Ltd.: *See—*
Hirose, Akira; and Ariyama, Kenzo, 4,417,800., Cl. 355-3.0TR.
Horike, Masanori; and Ebi, Yutaka, 4,418,352., Cl. 346-75.000.
Kameda, Masahiro, 4,418,136., Cl. 430-95.000.
Tani, Tatsuo; and Kono, Masao, 4,417,806., Cl. 355-14.0SH.

Ried, Helmut: *See—*
Cornelius, Gerhard; Hilsebein, Wolfgang; Ried, Helmut; and Gessner, Adolf W., 4,418,236., Cl. 585-408.000.

Rieder, Werner; and Fehrle, Martin, to Isovolta Osterreichische Isolierstoffwerke Aktiengesellschaft. Electrical conductor with polyester insulating layer and method therefor. 4,418,122., Cl. 428-480.000.

Rieken, William C.: *See—*
Marino, Richard P.; Rothamel, Richard J.; and Rieken, William C., 4,418,086., Cl. 426-302.000.

Rigler, Josef K.; Wienhofer, Ekkehard; Leithauser, Horst; and Trukenbrod, Karl, to Chemische Werke Huls AG. Fire retardant fine particulate expandable styrene polymers. 4,418,156., Cl. 521-56.000.

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Okada, Minoru; Matsuzawa, Masamitsu; Uezima, Osamu; Nakakuki, Teruo; and Horikoshi, Koki, 4,418,144., Cl. 435-96.000.

Riker Laboratories, Inc.: *See—*
Moore, George G. I., 4,418,074., Cl. 424-274.000.

Rimrock Corporation: *See—*
Burton, Charles A., 4,417,845., Cl. 414-733.000.

Ringwood, Robert C., Jr.: *See—*
Gibbons, Ambrose J., Jr.; and Ringwood, Robert C., Jr., 4,418,169., Cl. 524-178.000.

Rinno, Helmut: *See—*
Braun, Helmut; Rinno, Helmut; and Rauterkus, Karl J., 4,418,207., Cl. 560-178.000.

Ritchie, David S.: *See—*
Bagnall-Wild, Ralph H.; Smith, Gordon R.; Stewart, John H.; and Ritchie, David S., 4,418,361., Cl. 358-125.000.

Robbins, Jeffrey D., to Stauffer Chemical Company. Process for producing asymmetrical thioureas. 4,418,210., Cl. 564-24.000.

Robert Bosch GmbH: *See—*
Ebentheuer, Hans; and Hirt, Adam, 4,418,296., Cl. 310-70.00R.
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,417,693., Cl. 239-453.000.
Gruner, Heiko, 4,418,329., Cl. 338-28.000.
Latsch, Reinhard, 4,417,556., Cl. 123-425.000.
Poetsch, Dieter; and Belmares-Sarabia, Armand, 4,418,358., Cl. 358-80.000.
Schnaibel, Eberhard; and Junginger, Erich, 4,417,688., Cl. 236-91.00F.

Roberts, Clayton R., to General Electric Company. Mixer for use in a microwave system. 4,418,429., Cl. 455-327.000.

Roberts, Derek C., to Johnsen & Jorgensen (Plastics) Limited. Container and closure having tamper-proof feature. 4,417,666., Cl. 215-256.000.

Roberts, Thomas M.: *See—*
Ptashne, Mark; Lauer, Gail D.; Roberts, Thomas M.; and Backman, Keith C., 4,418,149., Cl. 435-253.000.

Robinson, Alan A., to Agence Spatiale Europeenne. Method and apparatus for controlling the energization of the electrical coils which control a magnetic bearing. 4,417,772., Cl. 308-10.000.

Robroy Industries: *See—*
Madej, Edward A., 4,417,711., Cl. 248-74.00R.

Roccaforte, Harry I., to Champion International Corporation. Reclosable carton and blank therefor. 4,417,661., Cl. 206-625.000.

Roccaforte, Harry I., to Champion International Corporation. Carton opening device. 4,417,678., Cl. 225-43.000.

Rockwell International Corporation: *See—*
Cain, Edwin F. C.; and McFarlen, William T., 4,417,854., Cl. 416-241.00B.
Flanagan, Joseph E., 4,417,930., Cl. 149-19.900.
Hon, John F., 4,418,413., Cl. 372-89.000.
Palovcik, John, 4,417,462., Cl. 72-367.000.
Schlapp, Albert; and Roos, Rudolf, 4,417,763., Cl. 296-216.000.
Rodgers, Harris G., Sr.: *See—*
Milliman, Bruce A.; and Rodgers, Harris G., Sr., 4,417,513., Cl. 101-41.000.
Rodi & Wienenberger AG: *See—*
Herchenbach, Wolfgang, 4,417,821., Cl. 368-291.000.
Roe, William J.: *See—*
Bhattacharyya, Bhupati R.; and Roe, William J., 4,417,992., Cl. 252-88.000.
Rogers, Howard G.; Eckert, Robert D.; Sahatjian, Ronald A.; and Sulesky, Robert A., to Polaroid Corporation. Film units containing thermally induced water-releasing benzotriazole complex. 4,418,139., Cl. 430-354.000.
Rohm GmbH: *See—*
Arndt, Peter J.; Lowitz, Joachim; Muller, Manfred; and Schlosser, Fritz, 4,418,204., Cl. 549-539.000.
Rohm and Haas Company: *See—*
Forand, Ronald R.; and Menz, Edward T., *Jr.*, 4,418,151., Cl. 436-505.000.
Rohr, Otto; Pissiotas, Georg; Bohner, Beat; and Burdeska, Kurt, to Ciba-Geigy Corporation. Herbicidal α-[3-(2-halo-4-trifluoromethyl-phenoxy)-6-halophenoxy]propionic acid thio esters and acids. 4,417,918., Cl. 71-100.000.
Rohr, Otto, to Ciba-Geigy Corporation. 3-Haloalkoxy-4-nitro-2'-chloro-4'-trifluoromethyldiphenyl ethers and herbicidal use thereof. 4,417,919., Cl. 71-124.000.
Roller, Hanno; and Nauerth, Karl-Heinz, to Fritz Eichenauer GmbH & Co. KG. Electric heater. 4,418,272., Cl. 219-541.000.
Rolls-Royce Limited: *See—*
Higginbotham, Gordon J. S., 4,417,381., Cl. 29-156.80H.
Ronci, Fernando M., to F. Ronci Company, Inc. Adjustable buckle construction. 4,417,372., Cl. 24-163.00R.
Ronnen, Uri G.: *See—*
Podolsky, Leaman B.; Ronnen, Uri G.; and Lardi, Francesco, 4,418,285., Cl. 290-40.00R.
Roos, Rudolf: *See—*
Schlapp, Albert; and Roos, Rudolf, 4,417,763., Cl. 296-216.000.
Rosan, Jose, *Jr.*, to Rexnord Inc. Method of forming metal ring in a bearing. 4,417,380., Cl. 29-148.40R.
Rosen, Harold A., to Hughes Aircraft Company. Two-axis antenna direction control system. 4,418,350., Cl. 343-359.000.
Rosenbeck, William H.; Eckart, Frederick; and Gerath, Francis C., to United Technologies Corporation. Welding system for contour joints. 4,418,266., Cl. 219-137.00R.
Rosenberg, William E., to Columbia Chemical Corporation. Aqueous acid plating bath and brightener mixture for producing semibright to bright electrodeposits of tin. 4,417,957., Cl. 204-54.00R.
Ross, Douglas: *See—*
Quaeck, Manfred W.; and Ross, Douglas, 4,417,634., Cl. 180-22.000.
Ross, Svante B.: *See—*
Hogberg, Thomas; de Paulis, Tomas; Ross, Svante B.; and Ulff, Carl B. J., 4,418,065., Cl. 424-263.000.
Rossie, Egbert; Hahn, Michael; and Schemperg, Lutz, to Audi NSU Auto Union AG. Window assembly for automotive vehicles. 4,417,419., Cl. 49-348.000.
Roth, Donald J.; Kubis, Charles S.; and Walter, John, to Continental Group, Inc., The. Lightweight container. 4,417,667., Cl. 220-67.000.
Rothamel, Richard J.: *See—*
Marino, Richard P.; Rothamel, Richard J.; and Rieken, William C., 4,418,086., Cl. 426-302.000.
Ruff, Stanley: *See—*
Gordon, Marc J.; and Ruff, Stanley, 4,417,495., Cl. 83-175.000.
Ruminsky, Robert T.; and Serber, Stephen L., to Honeywell Inc. Heat pump system defrost control. 4,417,452., Cl. 62-155.000.
Runzheimer, Hans-Volker: *See—*
Bergthaller, Peter; Schenk, Gunther; Wolfrum, Gerhard; Runzheimer, Hans-Volker; and Heidenreich, Holger, 4,418,143., Cl. 430-562.000.
Ruppert, Richard L.: *See—*
Case, James E.; Ruppert, Richard L.; and Manning, Lindley, 4,417,425., Cl. 52-125.500.
Rush, David H.: *See—*
Hahn, James H., 4,418,302., Cl. 318-138.000.
Russo, Frank R.: *See—*
Cuevas, Danilo L.; Russo, Frank R.; and Schindler, Francis E., 4,418,099., Cl. 427-229.000.
Rutherford, Sherman L.; Bliss, Arthur E.; and Schmidt, Noel J., to Benson, Inc. Method for forming a staggered recording head. 4,417,391., Cl. 29-825.000.
Ryabikov, Stanislav V.: *See—*
Lidorenko, Nikolai S.; Afian, Viktor V.; Vartanian, Albert V.; Martirosian, Ruben G.; Ryabikov, Stanislav V.; and Strebkov, Dmitry S., 4,418,238., Cl. 136-246.000.
Ryan, Gregory F.: *See—*
Ryan, Kathryn A.; and Ryan, Gregory F., 4,417,613., Cl. 150-52.00R.
Ryan, Joseph L.; Safdie, Elias; Watkins, Richard R.; and Kobs, Frederick E., to Honeywell Information Systems Inc. CRT Refresh memory system. 4,418,343., Cl. 340-723.000.
Ryan, Kathryn A.; and Ryan, Gregory F. Universal pacifier case. 4,417,613., Cl. 150-52.00R.
Ryder, George: *See—*
Pinto, Albert A.; and Ryder, George, 4,417,837., Cl. 414-104.000.
Saeki, Yukio: *See—*
Matsushima, Noriaki; Saeki, Yukio; and Tokunaga, Yukio, 4,418,161., Cl. 523-145.000.
Saeman, Walter C., to Olin Corporation. Layered glass batch pellets and apparatus for their production. 4,418,153., Cl. 501-29.000.
Safdie, Elias: *See—*
Ryan, Joseph L.; Safdie, Elias; Watkins, Richard R.; and Kobs, Frederick E., 4,418,343., Cl. 340-723.000.
Sahara, Masayoshi: *See—*
Nakai, Masaaki; and Sahara, Masayoshi, 4,417,794., Cl. 354-38.000.
Sahatjian, Ronald A.: *See—*
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Saiki, Akio: *See—*
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Saiki, Yukihiro; Kumazawa, Eitaro; and Ishioka, Yozo, to Snow Brand Milk Products Co., Ltd. Crushing/discharging device for materials being dried in a multistage type vacuum drying apparatus. 4,417,697., Cl. 241-65.000.
St. Clair, Clair J.: *See—*
Allgor, Clarence B.; St. Clair, Clair J.; and Pearson, Richard A., 4,418,388., Cl. 364-431.010.
Saito, Tomio: *See—*
Akagi, Kazuo; Fukuda, Akihiro; and Saito, Tomio, 4,417,421., Cl. 51-16.000.
Saitou, Sinichi: *See—*
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Sakurai, Junji, to Fujitsu Limited. Semiconductor memory system. 4,418,399., Cl. 365-51.000.
Sakurai, Yoshimi; Furukawa, Yoshimi; Kanai, Masaaki; and Osada, Yasufumi, to Honda Giken Kogyo Kabushiki Kaisha; and Furukawa Electric Co., Ltd. Electrical connector device. 4,417,775., Cl. 339-5.00M.
Salice, Luciano, to Arturo Salice S.p.A. Hinge bracket mounting plate assembly having a spring biased locking mechanism. 4,417,366., Cl. 16-258.000.
Samsel, Richard W., to United States of America, Navy. Directional data stabilization system. 4,418,306., Cl. 318-648.000.
Sandberg, Chester L.: *See—*
Clarke, Raymond; and Sandberg, Chester L., 4,417,782., Cl. 350-96.290.
Sander, Bruno; Hovemann, Friedrich; and Scherling, Kurt, to BASF Aktiengesellschaft. Dewatering of petroleum-containing sludges with recovery of the oil component. 4,417,976., Cl. 208-188.000.
Sandstrom, Paul H.: *See—*
Throckmorton, Morford C.; and Sandstrom, Paul H., 4,418,185., Cl. 526-201.000.
Sandy, Harold L.: *See—*
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Sano, Kunio: *See—*
Sato, Takahisa; Maruyama, Keizo; and Sano, Kunio, 4,418,045., Cl. 423-245.000.
Sano, Takao; Ogasawara, Masafumi; and Tsubakimori, Hiroshi, to Toray Industries, Inc. Apparatus for interlacing multifilament yarn by fluid. 4,417,375., Cl. 28-272.000.
Sanraku-Ocean Co., Ltd.: *See—*
Tanaka, Hiroshi; Yoshioka, Takeo; Shimauchi, Yasutaka; Oki, Toshikazu; Ishikura, Tomoyuki; Takeuchi, Tomio; and Umezawa, Hamao, 4,418,192., Cl. 536-6.400.
Sansom, William L. Fiber optic display device. 4,417,412., Cl. 40-547.000.
Sasaki, Akira. Pressure regulator with temperature compensation device. 4,417,689., Cl. 236-92.00R.
Sasaki, Yoshio, to Mitsubishi Denki Kabushiki Kaisha. Liquid separator for use in a refrigerating air conditioning apparatus. 4,417,453., Cl. 62-503.000.
Sasakura Engineering Co., Ltd.: *See—*
Minami, Kunihiko, 4,417,619., Cl. 165-113.000.
Sasib S.p.A.: *See—*
Garrone, Franco, 4,417,594., Cl. 131-110.000.
Sato, Takahisa; Maruyama, Keizo; and Sano, Kunio, to Nippon Shokubai Kagaku Kogyo Co., Ltd. Method for disposal of waste gas and apparatus therefor. 4,418,045., Cl. 423-245.000.
Satoh, Makoto; Miyakawa, Yoshitaka; Fujii, Etsuo; and Matsuda, Shohei, to Honda Giken Kogyo Kabushiki Kaisha. Braking oil pressure control device for an anti-skid brake system. 4,417,768., Cl. 303-113.000.
Sauers, Richard F.: *See—*
Levitt, George; and Sauers, Richard F., 4,417,917., Cl. 71-93.000.
Sawyer, Joseph A., to Tibbetts Industries, Inc. Cell assembly for electret transducer. 4,418,246., Cl. 179-111.00E.
Scandpower, Inc.: *See—*
Smith, Robert D., 4,418,035., Cl. 376-247.000.
Schaefer, Horst: *See—*
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Schaefer, Robert E.: *See—*
Chesney, Joseph J., *Jr.*; and Schaefer, Robert E., 4,418,166., Cl. 523-400.000.
Schafer, Gerhard, to Fritz Schafer Gesellschaft mit beschrankter Haftung. Apparatus for spraying workpieces and intercepting overspray. 4,417,541., Cl. 118-326.000.

Schatz, Anton: *See—*
Notzel, Joachim; Schatz, Anton; Buczek, Harthmuth; and Kirchhof, Gunther, 4,417,809., Cl. 355-46.000.

Scheib, Klaus: *See—*
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Schemperg, Lutz: *See—*
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Schenk Filterbau GmbH: *See—*
Baur, Rolf; and Diemer, Wolfgang, 4,417,980., Cl. 210-91.000.

Schenk, Gunther: *See—*
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Scherer Laboratories, Inc.: *See—*
Groat, Dennis E.; Sell, Richard W.; Kalish, Richard J.; and Melton, Horace E., 4,418,057., Cl. 424-151.000.

Scherling, Kurt: *See—*
Sander, Bruno; Hovemann, Friedrich; and Scherling, Kurt, 4,417,976., Cl. 208-188.000.

Schiepe, Heinz, to Heinz Schiepe Grosshandel und Generalvertretung fur Holzbearbeitungsmaschinen. Device for separating a stack by layers, particularly a stack of long timbers or lumber. 4,417,836., Cl. 414-32.000.

Schiff, Sidney; and Trepka, William J., to Phillips Petroleum Company. Viscosity index improver soluble in synthetic poly(α-olefin) lubricants. 4,418,234., Cl. 585-12.000.

Schildknecht, Othmar; and Cassoli, Eduardo, to Johnson & Johnson Baby Products Company. Method and apparatus for partitioning and/or shaping a fibrous batt. 4,417,676., Cl. 225-4.000.

Schilf, Lothar. Method of thermally insulating vessels. 4,417,382., Cl. 29-421.00R.

Schilling, Walter: *See—*
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,418,199., Cl. 548-451.000.
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,418,200., Cl. 548-451.000.

Schindler, Francis E.: *See—*
Cuevas, Danilo L.; Russo, Frank R.; and Schindler, Francis E., 4,418,099., Cl. 427-229.000.

Schirlin, Daniel: *See—*
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Schlapp, Albert; and Roos, Rudolf, to Rockwell International Corporation. Sliding-tilting-roof for motor vehicles. 4,417,763., Cl. 296-216.000.

Schleis, William J. Foot holddown device for performing situps. 4,417,726., Cl. 272-93.000.

Schlosser, Fritz: *See—*
Arndt, Peter J.; Lowitz, Joachim; Muller, Manfred; and Schlosser, Fritz, 4,418,204., Cl. 549-539.000.

Schmid, Karl; Grunert, Margarete; Heidrich, Jochen; and Tesmann, Holger, to Henkel Kommanditgesellschaft auf Aktien. Mixed formals of polyglycol ethers. 4,418,217., Cl. 568-593.000.

Schmid, Wolfgang, to Ciba-Geigy Corporation. Growth promoting quinoxaline-di-N-oxide carboxamides. 4,418,063., Cl. 424-248.540.

Schmidt, Noel J.: *See—*
Rutherford, Sherman L.; Bliss, Arthur E.; and Schmidt, Noel J., 4,417,391., Cl. 29-825.000.

Schmidt, Peter: *See—*
Smigerski, Rudolf; Dorner, Rosemarie; and Schmidt, Peter, 4,417,983., Cl. 210-527.000.

Schmidt, William P.: *See—*
Hegarty, William P.; and Schmidt, William P., 4,417,449., Cl. 62-28.000.

Schmiedel, Manfred: *See—*
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Schmitt, Burghard: *See—*
Heinz, Gerhard; Schmitt, Burghard; Dorn, Ingo H.; Gausepohl, Hermann; Gerberding, Karl; Jung, Rudolf H.; Mittnacht, Hans; Pohrt, Jurgen; and Witimer, Paul, 4,418,180., Cl. 525-314.000.

Schmoock, Roy F.; and Shauger, Herbert A., to Fischer & Porter Company. Electromagnetic flowmeter system having a feedback loop. 4,417,479., Cl. 73-861.160.

Schnaibel, Eberhard; and Junginger, Erich, to Robert Bosch GmbH. Temperature control system for vehicle passenger compartment. 4,417,688., Cl. 236-91.00F.

Schnegelberger, Harald: *See—*
Hennemann, Manfred; Andree, Hans; Lehmann, Rudolf; Schnegelberger, Harald; and Bellinger, Horst, 4,417,895., Cl. 8-137.000.

Schnettler, Richard A.; Dage, Richard C.; and Grisar, J. Martin, to Merrell Dow Pharmaceuticals Inc. Cardiotonic imidazolecarboxylic acid derivatives. 4,418,071., Cl. 424-273.00R.

Schoendorfer, Donald W.; and Latham, Allen, Jr., to Haemonetics Corporation. Centrifuge timer clamp. 4,417,884., Cl. 494-4.000.

Schoenfeld, David R.: *See—*
Moody, Roy A.; Bulanda, John J.; Guzay, Cazimir M.; and Schoenfeld, David R., 4,417,394., Cl. 29-882.000.

Schoeps, Jochen: *See—*
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Scholle Corporation: *See—*
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Scholle, William J.: *See—*
Scholle, William R.; Scholle, William J.; and Gunning, Michael J., 4,417,607., Cl. 141-1.000.

Scholle, William R.; Scholle, William J.; and Gunning, Michael J., to Scholle Corporation. Apparatus and method for aseptically filling flexible containers. 4,417,607., Cl. 141-1.000.

Schottel-Werft Josef Becker GmbH & Co. KG: *See—*
Krautkremer, Franz; Kessler, Achim; and Krautkraemer, Gerd, 4,417,877., Cl. 440-38.000.

Schreckenberg, Klaus: *See—*
Grosser, Heinrich; Dierkes, Hermann; Lutke, Hubertus; and Schreckenberg, Klaus, 4,417,499., Cl. 89-36.00K.

Schreiber, Peter; Steenfadt, Eberhard; and Bergman, Gerard P. M., to U.S. Philips Corporation. Dental tomography apparatus. 4,418,419., Cl. 378-040.000.

Schreiner, Kurt; and Jager, Horst, to Bayer Aktiengesellschaft. Phthalocyanine reactive dyestuffs. 4,418,015., Cl. 260-242.200.

Schroeck, Calvin W.: *See—*
Classon, Donald L.; and Schroeck, Calvin W., 4,417,990., Cl. 252-32.70E.

Schucker, Robert C.; and Wheelock, Kenneth S., to Exxon Research and Engineering Co. Process for increasing the activity of perovskite catalysts and hydrocarbon treating processes using the activated catalyst. 4,418,008., Cl. 502-340.000.

Schuett, Dieter: *See—*
Goetze, Volkmar; and Schuett, Dieter, 4,418,410., Cl. 371-15.000.

Schultz, Charles W.; and Thatcher, James L., to SI Handling Systems, Inc. Apparatus for loading articles into lanes on horizontal shelves. 4,417,838., Cl. 414-277.000.

Schwamm, Horst: *See—*
Wechsler, Hans G., 4,417,740., Cl. 280-87.010.

Schwarzbach, Richard J.; Keeler, Manley S.; Cavaiani, Randy J.; and Chapman, Michael K., to Pittway Corporation. Appliance control system. 4,418,333., Cl. 340-310.00A.

Schwem Instruments: *See—*
Alvarez, Luis W.; and Schwemin, Arnold J., 4,417,788., Cl. 350-500.000.

Schwemin, Arnold J.: *See—*
Alvarez, Luis W.; and Schwemin, Arnold J., 4,417,788., Cl. 350-500.000.

Schwer, John W. Steelmaking additive composition. 4,417,924., Cl. 75-257.000.

Scott, Lisbon. Wave and tidal energy driven electric generator. 4,418,286., Cl. 290-42.000.

Scott, Paul T., to Du Pont de Nemours, E. I., and Company. Copolyester binder filaments and fibers. 4,418,116., Cl. 428-288.000.

Sealed Power Corporation: *See—*
Anderson, David L.; and Joseph, A. David, 4,417,383., Cl. 29-511.000.

Sedlak, Michael: *See—*
Connaught, Ruth M.; Coty, Vernon F.; and Sedlak, Michael, 4,417,986., Cl. 210-759.000.

See, Yee-Chaung; Davies, Roderick D.; and Hartman, Dennis C., to Texas Instruments Incorporated. Vertical-etch direct moat isolation process. 4,418,094., Cl. 427-38.000.

Seifert, Kurt: *See—*
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,417,693., Cl. 239-453.000.

Seigenji, Kiyoshi: *See—*
Oyokota, Shigeru; Taniguchi, Nobuyuki; Hoda, Takeo; Tanii, Junichi; Seigenji, Kiyoshi; and Matsumoto, Toshiaki, 4,417,793., Cl. 354-21.000.

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Sekizawa, Yasuharu: *See—*
Okonogi, Tsuneo; Fukatsu, Shunzo; Hachisu, Mitsugu; Kawashima, Hiroko; Shitoh, Keiko; and Sekizawa, Yasuharu, 4,418,070., Cl. 424-270.000.

Sell, Richard W.: *See—*
Groat, Dennis E.; Sell, Richard W.; Kalish, Richard J.; and Melton, Horace E., 4,418,057., Cl. 424-151.000.

Selwitz, Charles M.: *See—*
Harrison, James J.; Pellegrini, John P.; and Selwitz, Charles M., 4,418,228., Cl. 568-937.000.

Sensor Developments, Inc.: *See—*
Johnson, James, 4,417,631., Cl. 177-210.0FP.

Senuma, Michio, to Canon Kabushiki Kaisha. Variable force electromagnetic shutter. 4,417,797., Cl. 354-234.000.

Sepulveda, Domingo; and Striebel, Edmund E., to United Technologies Corporation. Starting means for a gas turbine engine. 4,417,439., Cl. 60-39.141.

Serber, Stephen L.: *See—*
Ruminsky, Robert T.; and Serber, Stephen L., 4,417,452., Cl. 62-155.000.

Sericol Group Limited: *See—*
Curtis, John R., 4,418,138., Cl. 430-253.000.

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du Manoir de Juaye, Pierre; Guerit, Pierre; Pollet, Gilbert; and Vassiliadis, Marc, 4,418,028., Cl. 264-43.000.

Shafir, Eleonora G., to Mobil Oil Corporation. Method of recovering oil using steam. 4,417,620., Cl. 166-245.000.

Shambaugh, John S.; Yetman, Robert G.; and Zeltzer, Hyman, to United States of America, Air Force. Battery cell module. 4,418,127., Cl. 429-8.000.

Sharp, Allen B., to Al-Jon, Inc. Shear baler. 4,417,510., Cl. 100-98.00R.

Sharp Kabushiki Kaisha: *See*—
Suzuki, Hitoshi; and Makino, Fusao, 4,418,298., Cl. 318-341.000.
Yatsunami, Kenrow, 4,418,276., Cl. 235-462.000.

Shatterproof Glass Corporation: *See*—
McKelvey, Harold E., 4,417,968., Cl. 204-192.00R.

Shauger, Herbert A.: *See*—
Schmoock, Roy F.; and Shauger, Herbert A., 4,417,479., Cl. 73-861.160.

Shaw, Michael J., to Allied Paper Incorporated. Conductive barrier coat for electrostatic masters. 4,418,117., Cl. 428-327.000.

Sheibley, Dean W.: *See*—
Soltis, Daniel G.; Sheibley, Dean W.; and Nagle, William J., 4,418,130., Cl. 429-206.000.

Shell Oil Company: *See*—
Kim, Leo, 4,418,203., Cl. 549-531.000.

Shenfield, Leonard R.: *See*—
Nalley, Robert E.; and Shenfield, Leonard R., 4,418,368., Cl. 360-78.000.

Sheppard, John E.: *See*—
Young, Peter L.; Stein, Barry F.; and Sheppard, John E., 4,418,095., Cl. 427-63.000.

Sherwood Medical Company: *See*—
Talonn, Daniel A.; Phillips, Robert E.; and Ranford, Alan B., 4,417,574., Cl. 128-205.120.

Sherwood, Tom W. Combination coupon carrier and bag stiffener. 4,417,609., Cl. 141-98.000.

Shevde, Ketan: *See*—
Frankhouser, Paul L.; and Shevde, Ketan, 4,417,886., Cl. 604-53.000.

Shibukawa, Mitsuru; Shibuya, Chisei; and Ishii, Kunihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Secalonic acid derivatives and method for preparing thereof. 4,418,061., Cl. 424-245.000.

Shibuya, Atsuo: *See*—
Aisaka, Noboru; Nishikawa, Shigeru; Shibuya, Atsuo; Bessho, Yasuo; Akami, Hitoshi; and Ogawa, Shigeo, 4,417,401., Cl. 33-175.000.

Shibuya, Chisei: *See*—
Shibukawa, Mitsuru; Shibuya, Chisei; and Ishii, Kunihiko, 4,418,061., Cl. 424-245.000.

Shields, Walter. Ampule opener. 4,417,679., Cl. 225-93.000.

Shiga, Tsutomu, to Nippondenso Co., Ltd. Multi-path cooling in AC generator for vehicle. 4,418,295., Cl. 310-59.000.

Shigeo, Iwasaki; and Hiroshi, Haguchi, to Mitsuishi Fukai Tekkosho, Ltd. Vacuum type brick forming machine. 4,417,864., Cl. 425-73.000.

Shiibayashi, Masao: *See*—
Ikegawa, Masato; Tojo, Kenji; and Shiibayashi, Masao, 4,417,863., Cl. 418-55.000.

Shima, Kazuhiro: *See*—
Hirai, Eizo; and Shima, Kazuhiro, 4,418,058., Cl. 424-176.000.

Shimauchi, Yasutaka: *See*—
Tanaka, Hiroshi; Yoshioka, Takeo; Shimauchi, Yasutaka; Oki, Toshikazu; Ishikura, Tomoyuki; Takeuchi, Tomio; and Umezawa, Hamao, 4,418,192., Cl. 536-6.400.

Shimazu, Ken-ichi: *See*—
Patel, Jayanti; and Shimazu, Ken-ichi, 4,418,134., Cl. 430-88.000.

Shimizu, Kenichi: *See*—
Fujimoto, Tadao; Fujiuchi, Hiroyuki; Shimizu, Kenichi; and Ueda, Seiichiro, 4,417,529., Cl. 110-346.000.

Shimizu, Yoji: *See*—
Ikenoya, Yasuo; Hirano, Makoto; Shimizu, Yoji; and Matsuura, Masaaki, 4,417,442., Cl. 60-293.000.

Shin-Etsu Handotai Co., Ltd.: *See*—
Komatsuzaki, Yasuo, 4,417,945., Cl. 156-639.000.

Shiomi, Kengo, to Tokyo Juki Industrial Co., Ltd. Laterally pivotable upper feed dog. 4,417,536., Cl. 112-311.000.

Shionogi & Co., Ltd.: *See*—
Hirai, Eizo; and Shima, Kazuhiro, 4,418,058., Cl. 424-176.000.

Shiptenko, Robert C.: *See*—
Lewis, Alan C.; Ragard, Phillip A.; and Shiptenko, Robert C., 4,417,683., Cl. 227-109.000.

Shiseido Company, Ltd.: *See*—
Kasai, Yutaka; and Naramoto, Satoru, 4,417,827., Cl. 401-68.000.

Shishido, Tadao: *See*—
Katsuyama, Harumi; and Shishido, Tadao, 4,418,037., Cl. 422-56.000.
Mifune, Hiroyuki; Ishiguro, Shoji; Shishido, Tadao; and Nishimura, Tatsuo, 4,418,140., Cl. 430-351.000.

Shitoh, Keiko: *See*—
Okonogi, Tsuneo; Fukatsu, Shunzo; Hachisu, Mitsugu; Kawashima, Hiroko; Shitoh, Keiko; and Sekizawa, Yasuharu, 4,418,070., Cl. 424-270.000.

Shomo, Robert D. Folding bicycle. 4,417,745., Cl. 280-287.000.

Shore, Daniel B., to Dresser Industries, Inc. Load supporting hydraulic circuit with emergency automatic load restraint. 4,417,502., Cl. 91-447.000.

Shotbolt, Keith, to Constructors John Brown Limited. Connector assembly. 4,417,830., Cl. 405-169.000.

Shotwell, Jesse A. Shrimp processing system. 4,417,507., Cl. 99-352.000.

SI Handling Systems, Inc.: *See*—
Schultz, Charles W.; and Thatcher, James L., 4,417,838., Cl. 414-277.000.

Siebert, Rainer; Stutzle, Dietmar; and Weidner, Peter, to Diehl GmbH & Co. Detonating arrangement for missiles. 4,417,518., Cl. 102-212.000.

Siegel, Hardo: *See*—
Langershausen, Rolf; Martin, Christoph; Marcinowski, Stefan; Siegel, Hardo; and Kuesters, Werner, 4,418,146., Cl. 435-106.000.

Siemens Aktiengesellschaft: *See*—
Birkle, Siegfried; and Stoger, Klaus, 4,417,954., Cl. 204-14.00N.
Birth, Winfrid, 4,418,249., Cl. 179-170.0NC.
Elsel, Werner, 4,418,325., Cl. 335-216.000.
Exner, Klaus D., 4,417,386., Cl. 29-590.000.
Heus, Ruediger; and Marin, Heiner, 4,418,255., Cl. 200-147.00A.
Thorwarth, Ruediger, 4,418,264., Cl. 219-78.010.
von Gentzkow, Wolfgang; and Schmiedel, Manfred, 4,418,170., Cl. 524-193.000.

Sigl, Wayne C., to Kimberly-Clark Corporation. Producing an elasticized garment utilizing an articulated conveyor. 4,417,938., Cl. 156-270.000.

Signatron, Inc.: *See*—
Mahoney, Paul F.; and Bonn, Jerrold L., 4,418,319., Cl. 328-160.000.

Signetics Corporation: *See*—
Pan, Alfred I., 4,417,947., Cl. 156-643.000.

Silveston, Peter L.: *See*—
Cordoba-Molina, Jesus F.; Hudgins, Robert R.; and Silveston, Peter L., 4,417,988., Cl. 210-801.000.

Simon-Vicars Limited: *See*—
Bouette, David W., 4,418,089., Cl. 426-572.000.

Simonkay, Sandor: *See*—
Cserey, Laszlo; Horvath, Gabor; Szabados, Tamas; Simonkay, Sandor; Sztipanovits, Janos; Vimlati, Pal; Istvan, Zoltan; and Zillich, Pal, 4,417,812., Cl. 356-40.000.

Simonton, Robert D., to Mac Engineering and Equipment Co., Inc. Battery plate wrapper machine. 4,417,390., Cl. 29-730.000.

Singletary, Alger E. Emergency citizens' band radio system. 4,418,426., Cl. 455-67.000.

Sirett, Robert R.: *See*—
Murray, Edward D.; Woodman, Brenda J.; Maurice, Terrence J.; and Sirett, Robert R., 4,418,084., Cl. 426-250.000.

Sitzler, Hans-Dietrich, to G. Siempelkamp GmbH & Co. Press for the continuous production of pressedboard. 4,417,866., Cl. 425-364.00R.

Skaggs, Boyd T., to Container Corporation of America. Partition device. 4,417,684., Cl. 229-15.000.

SKODA: *See*—
Brezina, Josef, 4,417,377., Cl. 29-26.00A.

Skrobisch, Alfred. Apparatus for winding a wire or thread on C-shaped cores. 4,417,699., Cl. 242-7.150.

Skuza, Voytech T.: *See*—
Bernecki, Harry F.; Skuza, Voytech T.; Dulin, Kerry; Sridharan, Sri P.; Zabec, Glenn; and Edgell, James E., 4,417,681., Cl. 227-8.000.

Sloan Valve Company: *See*—
Billeter, Henry R., 4,417,767., Cl. 303-23.00R.

Smigerski, Rudolf; Dorner, Rosemarie; and Schmidt, Peter, to Passavant-Werke AG & Co. KG. Scraper apparatus for settling basins and the like. 4,417,983., Cl. 210-527.000.

Smith, Alfred A., to Guardian Products Company, Inc. Grab bar. 4,417,361., Cl. 4-577.000.

Smith, Arthur B.: *See*—
Pytlewski, Louis L.; Iaconianni, Frank J.; Krevitz, Kenneth; and Smith, Arthur B., 4,417,977., Cl. 208-262.000.

Smith, Cecil R., Jr.: *See*—
Powell, Richard G.; and Smith, Cecil R., Jr., 4,418,064., Cl. 424-248.540.

Smith, David T.: *See*—
Gardner, Donald E.; and Smith, David T., 4,417,658., Cl. 206-438.000.

Smith, Gordon R.: *See*—
Bagnall-Wild, Ralph H.; Smith, Gordon R.; Stewart, John H.; and Ritchie, David S., 4,418,361., Cl. 358-125.000.

Smith, Harold H.: *See*—
Smith, Rhoda J.; and Smith, Harold H., 4,418,390., Cl. 364-526.000.

Smith, Jimmy B.: *See*—
Vining, Paul H.; and Smith, Jimmy B., 4,417,528., Cl. 110-229.000.

Smith, Larry G.: *See*—
Nicholson, David W.; Smith, Larry G.; Dinius, Harold B.; and Oberle, Ronald R., 4,417,662., Cl. 209-522.000.

Smith, Leland B.; and McIntyre, Robert A., to Beckman Instruments, Inc. Electroencephalograph. 4,417,590., Cl. 128-731.000.

Smith, Luther W.: *See*—
Dawson, W. Clifford; Bard, George D.; Smith, Luther W.; and Laurin, Bernard L., 4,417,790., Cl. 351-166.000.

Smith, Rhoda J.; and Smith, Harold H. Method and apparatus for making a coded chart of a color subject. 4,418,390., Cl. 364-526.000.

Smith, Richard R.; and Kelley, Mellis M., to Goodyear Tire & Rubber Company, The. Polyethylene isophthalate having reduced cyclic dimer content and process therefore. 4,418,188., Cl. 528-274.000.

Smith, Richard W.; and Waugaman, William J., to Motor Wheel Corporation. Wire spoke vehicle wheel and method of manufacture. 4,417,766., Cl. 301-55.000.

Smith, Robert D., to Scandpower, Inc. Coolant condition monitor for nuclear power reactor. 4,418,035., Cl. 376-247.000.

Smock, Steven W., to Emhart Industries, Inc. Control system including a timing mechanism for a drying apparatus. 4,418,271., Cl. 219-493.000.

Snia Viscosa Societa Nazionale Industria Applicazioni Viscosa SpA: *See—*
De Gaetano, Mario; and Canavesi, Luigi, 4,418,016., Cl. 260-404.000.

Snow Brand Milk Products Co., Ltd.: *See—*
Saiki, Yukihiro; Kumazawa, Eitaro; and Ishioka, Yozo, 4,417,697., Cl. 241-65.000.

Snowden, Dennie C.; and Moree, Elwood D. Safety belt clamp apparatus. 4,417,713., Cl. 248-228.000.

Societe Anonyme de Telecommunications: *See—*
Gauthier, Andre; and Morand, Jean C. F., 4,418,096., Cl. 427-76.000.

Societe Anonyme dite: L'Oreal: *See—*
Bugaut, Andree; and Andrillon, Patrick, 4,417,896., Cl. 8-414.000.

Societe Anonyme dite: Ulmic France: *See—*
Buffon, Jean; and Trome, Edouard, 4,417,461., Cl. 72-345.000.

Societe Francaise de Stockage Geologique "Goestock": *See—*
Berezoutzky, Georges, 4,417,829., Cl. 405-54.000.

Societe Francaise d'Electrometallurgie Sofrem: *See—*
Mena, Andre; Charriere, Jean-Michel; and Desbrest, Jean, 4,417,920., Cl. 75-63.000.

Societe Industrielle de Liaisons Electriques Silec: *See—*
Chazelas, Elie, 4,418,240., Cl. 174-73.00R.

Sodermark, Nils-Erik: *See—*
Janne, Jouko, 4,417,963., Cl. 204-130.000.

Solid State Systems, Inc.: *See—*
Edgar, C. Mills, 4,418,244., Cl. 179-2.00A.

Soloviev, Sergei A.; Fedorov, Svyatoslav N.; Osetsky, Vitaly P.; and Durnev, Valery V., deceased (by Durneva, Tamara S., administratrix), to Moskovsky Nauchno-Issledovatelsky Institut Mikrokhirurgii Glaza. Device for marking out the cornea in ophthalmosurgical operations. 4,417,579., Cl. 128-303.00R.

Soltis, Daniel G.; Sheibley, Dean W.; and Nagle, William J., to United States of America, National Aeronautics and Space Administration. Additive for zinc electrodes. 4,418,130., Cl. 429-206.000.

Sony Corporation: *See—*
Abe, Fumiyoshi; and Okafuji, Takayuki, 4,418,303., Cl. 318-254.000.
Fujimori, Tohru; and Kusui, Yoshino, 4,418,373., Cl. 360-132.000.
Moriya, Ryusuke, 4,418,366., Cl. 360-75.000.
Ogawa, Hiroshi, 4,418,406., Cl. 369-124.000.

Spauschus, Hans O., to Hilliard-Lyons Patent Management, Inc. Vapor compression refrigerant system monitor and gas removal apparatus. 4,417,451., Cl. 62-129.000.

Spear, Kenneth J., to Huffy Corporation. Bicycle seatpost assembly. 4,417,744., Cl. 280-281.00R.

Spector, George: *See—*
Penna, Americo; and Spector, George, 4,417,716., Cl. 249-121.000.
Stanisic, Jovo; and Spector, George, 4,417,951., Cl. 202-197.000.

Spectrol Electronics Corporation: *See—*
Bader, Ramzi N., 4,418,337., Cl. 340-571.000.

Spencer, Harvey J., to Paper Converting Machine Company. Method of diaper manufacture. 4,417,935., Cl. 156-80.000.

Speno International S.A.: *See—*
Panetti, Romolo, 4,417,466., Cl. 73-105.000.

Sperry Corporation: *See—*
Campbell, Willis R., 4,417,436., Cl. 56-341.000.
Cosimini, Gregory J.; Lo, David S.; and Paul, Maynard C., 4,418,400., Cl. 365-87.000.
Young, Peter L.; Stein, Barry F.; and Sheppard, John E., 4,418,095., Cl. 427-63.000.
Zscheile, John W., Jr., 4,418,393., Cl. 364-724.000.

Spielau, Paul: *See—*
Breitscheidel, Hans-Ulrich; Spielau, Paul; and Alfter, Franz-Werner, 4,417,932., Cl. 156-62.200.

Spofford, Walter R., Jr.; and Pomerantz, Daniel I., to Emhart Industries, Inc. Temperature sensing circuit for semiconductor junction temperature probe. 4,418,339., Cl. 340-595.000.

Spolek pro chemickou a hutni vyrobu, narodni podnik: *See—*
Beranek, Ivan; Kyral, Josef; Uhlir, Miroslav; and Zlesak, Ivan, 4,417,923., Cl. 75-257.000.

Sprecher & Schuh AG: *See—*
Graf, Rudolf, 4,418,256., Cl. 200-148.00R.

Sprecker, Mark A.; and Hall, John B., to International Flavors & Fragrances Inc. Substituted tricyclodecane derivatives, processes for producing same and organoleptic uses thereof. 4,418,010., Cl. 252-522.00R.

Sprinter System AB: *See—*
Wallin, Kay, 4,417,882., Cl. 493-174.000.

Sridharan, Sri P.: *See—*
Bernecki, Harry F.; Skuza, Voytech T.; Dulin, Kerry; Sridharan, Sri P.; Zabec, Glenn; and Edgell, James E., 4,417,681., Cl. 227-8.000.

Srinivasan, Rangaswamy: *See—*
Mayne-Banton, Veronica I.; and Srinivasan, Rangaswamy, 4,417,948., Cl. 156-643.000.

Staeubli Ltd.: *See—*
Kleiner, Walter, 4,417,604., Cl. 139-329.000.

Stahl, Theo; and Buhler, Ulrich, to Cassella Aktiengesellschaft. Process for preparing burn-out effects on textile materials. 4,417,897., Cl. 8-464.000.

Stanadyne, Inc.: *See—*
Moen, Alfred M., 4,417,602., Cl. 137-625.170.

Standard Keil Hardware Manufacturing Co.: *See—*
Loikitz, Frank F., 4,417,430., Cl. 52-584.000.

Standard Oil Company: *See—*
Weisrock, William P.; and McCarthy, Edward F., 4,418,145., Cl. 435-104.000.

Standard Oil Company (Indiana): *See—*
Kim, Dae K.; and Bertolacini, Ralph J., 4,418,006., Cl. 502-73.000.
Morello, Edwin F., 4,418,189., Cl. 528-345.000.
Udovich, Carl A.; and Eryman, William S., 4,418,003., Cl. 502-209.000.

Stanisic, Jovo; and Spector, George. Distiller and evaporator for sea water. 4,417,951., Cl. 202-197.000.

Stapleton, John J., to International Telephone and Telegraph Corporation. Omnispectravision. 4,418,359., Cl. 358-65.000.

Stauffer Chemical Company: *See—*
Robbins, Jeffrey D., 4,418,210., Cl. 564-24.000.

Stearley, John W.: *See—*
Busby, Robert A.; Nat, Gursharan P. S.; and Stearley, John W., 4,418,254., Cl. 200-68.300.

Steck Manufacturing Co., Inc.: *See—*
Steck, Mark A., 4,417,398., Cl. 30-116.000.

Steck, Mark A., to Steck Manufacturing Co., Inc. Tool for handling wire. 4,417,398., Cl. 30-116.000.

Steenfadt, Eberhard: *See—*
Schreiber, Peter; Steenfadt, Eberhard; and Bergman, Gerard P. M., 4,418,419., Cl. 378-040.000.

Stein, Alexander; Rabinowitz, Paul; and Kaldor, Andrew, to Exxon Research and Engineering Company. Laser radiometer. 4,417,822., Cl. 374-129.000.

Stein, Barry F.: *See—*
Young, Peter L.; Stein, Barry F.; and Sheppard, John E., 4,418,095., Cl. 427-63.000.

Steinberg, Hyman A. Solar oven access door. 4,417,566., Cl. 126-451.000.

Stephens, Vernon E. Tool for cleaning or changing mig-contact-tips. 4,417,487., Cl. 81-53.200.

Stettner & Co.: *See—*
Bertl, Gerd, 4,418,376., Cl. 361-293.000.

Stevenson, Thomas T.; and Zenios, Marios C., to Caterpillar Tractor Co. Speed and timing angle measurement. 4,417,469., Cl. 73-119.00A.

Stewart, Andrew D. G.: *See—*
Lawrence, John C.; Stewart, Andrew D. G.; and Dodson, John S., 4,417,564., Cl. 125-30.00R.

Stewart, John H.: *See—*
Bagnall-Wild, Ralph H.; Smith, Gordon R.; Stewart, John H.; and Ritchie, David S., 4,418,361., Cl. 358-125.000.

Stock Equipment Company: *See—*
Finet, Alain; and Nerone, Louis R., 4,418,389., Cl. 364-478.000.

Stockman, Richard F., to Air Preheater Company, Inc. Cast iron recuperator. 4,417,615., Cl. 164-94.000.

Stoddart, Barry, to Procter & Gamble Company, The. Particulate detergent additive compositions. 4,417,994., Cl. 252-135.000.

Stoger, Klaus: *See—*
Birkle, Siegfried; and Stoger, Klaus, 4,417,954., Cl. 204-14.00N.

Stolle, Ralph J., to Stolle Research and Development Corporation. Easy open can end with pull tab having retained tear strip with stress relief means. 4,417,668., Cl. 220-269.000.

Stolle Research and Development Corporation: *See—*
Stolle, Ralph J., 4,417,668., Cl. 220-269.000.

Storni, Angelo: *See—*
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,418,199., Cl. 548-451.000.
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, 4,418,200., Cl. 548-451.000.

Stout, Gregg W., to Otis Engineering Corporation. Plunger lift control. 4,417,858., Cl. 417-58.000.

Strange, Ronald L. Bow sight. 4,417,403., Cl. 33-265.000.

Stratton, James A., to Minnesota Mining and Manufacturing Company. Double-coated tape construction having an identifiable extended liner. 4,418,105., Cl. 428-40.000.

Strebkov, Dmitry S.: *See—*
Lidorenko, Nikolai S.; Afian, Viktor V.; Vartanian, Albert V.; Martirosian, Ruben G.; Ryabikov, Stanislav V.; and Strebkov, Dmitry S., 4,418,238., Cl. 136-246.000.

Streetman, William E.; and Daftary, Shashikumar H., to American Cyanamid Company. Self-crimping acrylic fiber from a melt of two non-compatible polymers. 4,418,176., Cl. 525-57.000.

Striebel, Edmund E.: *See—*
Sepulveda, Domingo; and Striebel, Edmund E., 4,417,439., Cl. 60-39.141.

Strietzel, Rainer, to Brown, Boveri & Cif AG. Method and apparatus for generating an equipment reply signal for the automatic identification of objects and/or living beings. 4,418,411., Cl. 371-67.000.

Studt, William L.: *See—*
Douglas, George H.; Diamond, Julius; Studt, William L.; and Dodson, Stuart A., 4,418,209., Cl. 564-27.000.

Sturm, George W.: *See—*
Jon, Min-Chung; Palazzo, Vito; and Sturm, George W., 4,417,478., Cl. 73-801.000.

Stussi, Hans. Freestanding stair assembly and riser therefor. 4,417,429., Cl. 52-182.000.

Stutzle, Dietmar: *See—*
Siebert, Rainer; Stutzle, Dietmar; and Weidner, Peter, 4,417,518., Cl. 102-212.000.

Sublette, Jerry M.: *See—*
Paterson, Robert L.; and Sublette, Jerry M., 4,417,824., Cl. 400-477.000.

Sudbeck, Rainer, to Pierburg GmbH & Co. KG. Piston pump. 4,417,857., Cl. 417-490.000.
Suenaga, Hiroyoshi: *See*—
Ohuchi, Chiaki; Kohsaka, Yoji; and Suenaga, Hiroyoshi, 4,417,493., Cl. 83-15.000.
Sugimoto, Mamoru: *See*—
Fujii, Setsuro; Sugimoto, Mamoru; and Yaegashi, Takashi, 4,418,012., Cl. 260-112.50R.
Sugiura, Yoji; Hagiwara, Toshio; Okumura, Toru; and Nakahara, Syunichi, to Canon Kabushiki Kaisha. Single lens reflex camera body. 4,417,796., Cl. 354-152.000.
Sulesky, Robert A.: *See*—
Rogers, Howard G.; Eckert, Robert D.; Sahatjian, Ronald A.; and Sulesky, Robert A., 4,418,139., Cl. 430-354.000.
Sumitomo Chemical Company, Limited: *See*—
Kojima, Atsuyuki; Irie, Tsunemasa; Harada, Shuichi; Kameno, Yoshito; Katsube, Junki; and Yamamoto, Hisao, 4,418,079., Cl. 424-330.000.
Terashima, Shiro; Tanno, Norihiko; and Koga, Kenji, 4,418,218., Cl. 568-633.000.
Sumitomo Durez Company, Ltd.: *See*—
Matsushima, Noriaki; Saeki, Yukio; and Tokunaga, Yukio, 4,418,161., Cl. 523-145.000.
Sundberg, Jack G., to Chandler Evans Inc. Shaft seal assembly having universal washer with bores for springs. 4,417,734., Cl. 277-93.0SD.
Sundstrand Corporation: *See*—
Cygnor, John E.; Whitesel, Terry L.; and Mosure, Duane C., 4,417,851., Cl. 415-150.000.
Supreme Equipment & Systems Corp.: *See*—
Quinn, David A.; and Peros, Mladen, 4,417,524., Cl. 105-101.000.
Surgical Design: *See*—
Banko, Anton, 4,417,578., Cl. 128-303.00R.
Surgicot, Inc.: *See*—
Gardner, Donald E.; and Smith, David T., 4,417,658., Cl. 206-438.000.
Suroff, Hyman. Self-propelled roller skate. 4,417,737., Cl. 280-11.115.
Suzuki, Hitoshi; and Makino, Fusao, to Sharp Kabushiki Kaisha. Motor speed control circuit. 4,418,298., Cl. 318-341.000.
Suzuki, Kiyonobu. Apparatus for determining the sex of a chick. 4,417,663., Cl. 209-587.000.
Suzuki, Kunihiko; and Muraoka, Akihiko, to Nissan Motor Company, Limited. Four-wheel-drive system for automotive vehicle. 4,417,642., Cl. 180-249.000.
Suzuki, Masataka: *See*—
Matsuda, Susumu; Matsukura, Nobuaki; Suzuki, Masataka; and Narushima, Tsugio, 4,417,517., Cl. 101-288.000.
Suzuki, Masatoshi: *See*—
Matsuda, Minoru; Kato, Kentaro; and Suzuki, Masatoshi, 4,417,559., Cl. 123-559.000.
Suzuki, Osamu: *See*—
Oishi, Kengo; and Suzuki, Osamu, 4,417,704., Cl. 242-197.000.
Suzuki, Ryo: *See*—
Otani, Katsuya; Suzuki, Ryo; Watanabe, Keiji; and Tsuchihashi, Michihiro, 4,418,300., Cl. 313-573.000.
Suzuki, Toyotosi: *See*—
Tamura, Shuichi; Suzuki, Toyotosi; Tamamura, Hideo; and Matsuda, Mutsuhide, 4,417,795., Cl. 354-25.000.
Swagerty, Arnold; and Mitchell, William A., to Frederick Electronics Corporation. Digital phase-locked loop circuit. 4,418,318., Cl. 328-155.000.
Swede, Harald G.: *See*—
Edebo, Lars B.; Swede, Harald G.; and Tornqvist, Nils-Erik, 4,417,926., Cl. 134-17.000.
Swiss Aluminium Ltd.: *See*—
Arnason, Tomas; Franke, Alwis; and Tschopp, Theodor, 4,417,958., Cl. 204-67.000.
Synair Corporation: *See*—
Gomberg, Edward N.; and Wright, James O. B., 4,418,093., Cl. 427-8.000.
Syntex (U.S.A.) Inc.: *See*—
Wren, Douglas L., 4,418,206., Cl. 560-55.000.
Syverson, Charles D., to Power Group International Corporation. Wind power generator and control therefore. 4,418,287., Cl. 290-44.000.
Szabados, Tamas: *See*—
Cserey, Laszlo; Horvath, Gabor; Szabados, Tamas; Simonkay, Sandor; Sztipanovits, Janos; Vimlati, Pal; Istvan, Zoltan; and Zillich, Pal, 4,417,812., Cl. 356-40.000.
Sztipanovits, Janos: *See*—
Cserey, Laszlo; Horvath, Gabor; Szabados, Tamas; Simonkay, Sandor; Sztipanovits, Janos; Vimlati, Pal; Istvan, Zoltan; and Zillich, Pal, 4,417,812., Cl. 356-40.000.
Tabata, Yoichiro; Ueguri, Shigeo; Komura, Hirotsugu; and Ito, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Device with high frequency contactless type arc generating mechanism. 4,418,265., Cl. 219-130.400.
Tadakuma, Susumu: *See*—
Tanaka, Shigeru; and Tadakuma, Susumu, 4,418,380., Cl. 363-10.000.
Taguro, Akira: *See*—
Yasuda, Sinichi; Kurchara, Takayuki; and Taguro, Akira, 4,418,221., Cl. 568-757.000.
Tai, Anthony M., to Environmental Research Institute of Michigan. Optical residue arithmetic computer having programmable computation module. 4,418,394., Cl. 364-746.000.
Taisho Pharmaceutical Co., Ltd.: *See*—
Tamai, Masaharu; Morimoto, Shigeo; Adachi, Takashi; Oguma, Kiyoshi; Hanada, Kazunori; and Omura, Sadafumi, 4,418,075., Cl. 424-278.000.
Takachi, Hiroshi: *See*—
Nakamura, Shigeru; Ueki, Yoshihiko; and Takachi, Hiroshi, 4,417,870., Cl. 431-33.000.
Takahashi, Katsuhiko: *See*—
Kasuga, Takuzo; Toga, Yuzo; Okamoto, Ichiro; and Takahashi, Katsuhiko, 4,418,172., Cl. 524-292.000.
Takahashi, Tadashi: *See*—
Hayashida, Hiroshi; Takahashi, Tadashi; Miyashita, Kunio; and Kawakami, Kanji, 4,418,372., Cl. 360-113.000.
Takeda Chemical Industries, Ltd.: *See*—
Doura, Fumihiro; Nakabayashi, Masamitsu; and Morimoto, Taiji, 4,418,177., Cl. 525-57.000.
Taketomi, Yasuta: *See*—
Izumi, Toshiaki; Taketomi, Yasuta; and Kobuke, Takayoshi, 4,418,126., Cl. 428-694.000.
Takeuchi, Tomio: *See*—
Tanaka, Hiroshi; Yoshioka, Takeo; Shimauchi, Yasutaka; Oki, Toshikazu; Ishikura, Tomoyuki; Takeuchi, Tomio; and Umezawa, Hamao, 4,418,192., Cl. 536-6.400.
Talonn, Daniel A.; Phillips, Robert E.; and Ranford, Alan B., to Sherwood Medical Company. Liquid drain for patient breathing apparatus. 4,417,574., Cl. 128-205.120.
Tamai, Masaharu; Morimoto, Shigeo; Adachi, Takashi; Oguma, Kiyoshi; Hanada, Kazunori; and Omura, Sadafumi, to Taisho Pharmaceutical Co., Ltd. Epoxysuccinyl amino acid derivatives. 4,418,075., Cl. 424-278.000.
Tamamura, Hideo: *See*—
Tamura, Shuichi; Suzuki, Toyotosi; Tamamura, Hideo; and Matsuda, Mutsuhide, 4,417,795., Cl. 354-25.000.
Tamura, Shuichi; Suzuki, Toyotosi; Tamamura, Hideo; and Matsuda, Mutsuhide, to Canon Kabushiki Kaisha. Automatic focus detection device. 4,417,795., Cl. 354-25.000.
Tamura, Takeo, to Nissan Motor Co., Ltd. Apparatus to prevent reflection of vehicle instrument panel illumination light. 4,418,377., Cl. 362-19.000.
Tanabe, Kenjiro: *See*—
Ueda, Yoshihiro; Kimura, Yoshikazu; Yonehara, Hiroyuki; and Tanabe, Kenjiro, 4,417,810., Cl. 355-74.000.
Tanaka, Hiroaki; and Akita, Shigeyuki, to Nippon Soken, Inc. Rotational position detecting apparatus. 4,418,347., Cl. 340-870.370.
Tanaka, Hiroaki; and Akita, Sigeyuki, to Nippon Soken, Inc. Rotation position detector using stationary and rotatable disk plates. 4,418,348., Cl. 340-870.370.
Tanaka, Hiroshi; Yoshioka, Takeo; Shimauchi, Yasutaka; Oki, Toshikazu; Ishikura, Tomoyuki; Takeuchi, Tomio; and Umezawa, Hamao, to Sanraku-Ocean Co., Ltd. Anthracyclinone trisaccharide compounds. 4,418,192., Cl. 536-6.400.
Tanaka, Shigeru; and Tadakuma, Susumu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method and apparatus for controlling the circulating current of a cycloconverter. 4,418,380., Cl. 363-10.000.
Tani, Masami; Esaki, Tamemaru; and Ohno, Yoshikata, to Kuraray Co., Ltd. Filling material and process for manufacturing same. 4,418,103., Cl. 428-4.000.
Tani, Tatsuo; and Kono, Masao, to Ricoh Company, Ltd. Method for effecting registration for a copying apparatus. 4,417,806., Cl. 355-14.0SH.
Taniguchi, Nobuyuki: *See*—
Oyokota, Shigeru; Taniguchi, Nobuyuki; Hoda, Takeo; Tanii, Junichi; Seigenji, Kiyoshi; and Matsumoto, Toshiaki, 4,417,793., Cl. 354-21.000.
Tanii, Junichi: *See*—
Oyokota, Shigeru; Taniguchi, Nobuyuki; Hoda, Takeo; Tanii, Junichi; Seigenji, Kiyoshi; and Matsumoto, Toshiaki, 4,417,793., Cl. 354-21.000.
Tanimoto, Yoshinori: *See*—
Kitadate, Kenichiro; and Tanimoto, Yoshinori, 4,418,421., Cl. 378-199.000.
Tanno, Norihiko: *See*—
Terashima, Shiro; Tanno, Norihiko; and Koga, Kenji, 4,418,218., Cl. 568-633.000.
Tarumi, Mitio; Tokitsu, Tetsuya; and Matsumoto, Yoshio, to Chugai Ro Kogyo Co., Ltd. Method and apparatus for cooling skid pipes in continuous slab reheating furnace. 4,417,871., Cl. 432-1.000.
Tateishi, Kazuyoshi: *See*—
Kobayashi, Masato; Hoshino, Yasushi; Tateishi, Kazuyoshi; Isobe, Minoru; Konishi, Hiroshi; Koga, Yoshitomo; and Hagiwara, Shigemi, 4,417,803., Cl. 355-3.0H-U.
Taylor, Byron K., to RCA Corporation. Stylus arm for video disc player. 4,418,408., Cl. 369-170.000.
Taylor, John D. Alarm indicating dislocation of fire extinguisher. 4,418,336., Cl. 340-571.000.
Taylor, Scot W.: *See*—
Davis, Earl K.; Landron, Rafael; and Taylor, Scot W., 4,417,913., Cl. 65-59.100.
TDK Electronics Co., Ltd.: *See*—
Izumi, Toshiaki; Taketomi, Yasuta; and Kobuke, Takayoshi, 4,418,126., Cl. 428-694.000.
Technicare Corporation: *See*—
Trimmer, William S. N.; and Vilkomerson, David H. R., 4,417,582., Cl. 128-660.000.
Technicon Instruments Corporation: *See*—
Adler, Harvey J., 4,418,039., Cl. 422-82.000.

Technigaz: *See—*
Argy, Gilles, 4,417,603., Cl. 138-149.000.
Tecnomare S.p.A.: *See—*
Di Tella, Vincenzo; Falbo, Dario; Minardi, Paolo; and Tinebra, Roberto, 4,417,537., Cl. 114-230.000.
Teepak, Inc.: *See—*
Washburn, Harry G., 4,417,368., Cl. 17-49.000.
Tekno AG: *See—*
Baliozian, Mardick, 4,417,399., Cl. 33-448.000.
Tektronix, Inc.: *See—*
Bateman, Glenn, 4,418,317., Cl. 328-145.000.
Telefunken Electronic GmbH: *See—*
Bohme, Rolf, 4,418,321., Cl. 330-252.000.
Teletype Corporation: *See—*
Menden, Thomas J., 4,418,371., Cl. 360-106.000.
Temple, Victor A. K., to General Electric Company. Processes for manufacturing insulated-gate semiconductor devices with integral shorts. 4,417,385., Cl. 29-571.000.
Teramachi, Hiroshi. Linear ball bearing unit. 4,417,771., Cl. 308-6.00C.
Terashima, Shiro; Tanno, Norihiko; and Koga, Kenji, to Sumitomo Chemical Company, Limited. Process for producing dihydronaphthalene derivatives. 4,418,218., Cl. 568-633.000.
Terayama, Toshiro: *See—*
Nakamoto, Yasunobu; and Terayama, Toshiro, 4,417,446., Cl. 60-641.700.
Tesch, James F.: *See—*
Hacker, Richard K.; and Tesch, James F., 4,417,850., Cl. 415-142.000.
Teshima, Takanori: *See—*
Torii, Koshi; Maruyama, Toshinori; Akita, Yoshio; and Teshima, Takanori, 4,418,311., Cl. 320-48.000.
Tesmann, Holger: *See—*
Schmid, Karl; Grunert, Margarete; Heidrich, Jochen; and Tesmann, Holger, 4,418,217., Cl. 568-593.000.
Texaco Development Corp.: *See—*
Hunter, Walter D., 4,417,989., Cl. 252-8.55R.
Texaco Inc.: *See—*
Yaghmaie, Farrokh; and McKeon, Ronald J., 4,417,902., Cl. 44-51.000.
Texas Instruments Incorporated: *See—*
Brantingham, George L.; and Graber, Warren S., 4,418,397., Cl. 364-900.000.
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Rao, G. R. Mohan, 4,418,293., Cl. 307-530.000.
See, Yee-Chaung; Davies, Roderick D.; and Hartman, Dennis C., 4,418,094., Cl. 427-38.000.
Textilma AG: *See—*
Durville, Gerard, 4,417,455., Cl. 66-207.000.
Textron Inc.: *See—*
Bernecki, Harry F.; Skuza, Voytech T.; Dulin, Kerry; Sridharan, Sri P.; Zabec, Glenn; and Edgell, James E., 4,417,681., Cl. 227-8.000.
Dyson, Lewis L., 4,417,881., Cl. 464-150.000.
Thalacker, Ronald A.: *See—*
Jailor, John J.; and Thalacker, Ronald A., 4,418,261., Cl. 219-10.55R.
Thatcher, James L.: *See—*
Schultz, Charles W.; and Thatcher, James L., 4,417,838., Cl. 414-277.000.
Theeuwes, Felix, to Alza Corporation. Disinfecting with chlorine-containing biocide dispensed from shaped polymeric body. 4,418,038., Cl. 422-37.000.
Theodor Groz & Sohne: *See—*
Berentzem, Hardo, 4,417,454., Cl. 66-123.000.
Thepault, Yves, to Regie Nationale des Usines Renault. Rapid fixing device consisting of a spring unit. 4,417,635., Cl. 180-68.00R.
Theurer, Josef; and Bock, Gernot, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Mobil track correction machine. 4,417,522., Cl. 104-7.00B.
Thibodeau, David T. Beverage can container. 4,417,657., Cl. 206-427.000.
Thiel, Klaus: *See—*
Brachmann, Walter; Kornau, Horst; and Thiel, Klaus, 4,418,173., Cl. 524-425.000.
Thomaier, Dieter: *See—*
Crispin, Brunhart; Voss, Nobert; Pohl, Wulf-Dieter; and Thomaier, Dieter, 4,417,441., Cl. 60-251.000.
Thomas & Betts Corporation: *See—*
Knapp, Robert E., 4,417,780., Cl. 339-99.00R.
Wilson, Albert H., 4,417,779., Cl. 339-75.0MP.
Thomas, Edwin P.: *See—*
Halvorsen, Henry J.; Marchetto, Albert V.; and Thomas, Edwin P., 4,417,778., Cl. 339-17.00M.
Thomas J. Lipton, Inc.: *See—*
Mitchell, Robert M., 4,417,433., Cl. 53-413.000.
Thomas, Jacob E., to NCR Corporation. Ink control for ink jet printer. 4,418,353., Cl. 346-140.00R.
Thomas, Luther B. Combined internal combustion and steam engine. 4,417,447., Cl. 60-712.000.
Thompson, David M. Universal chock. 4,417,539., Cl. 114-381.000.
Thomson-CsF: *See—*
Trotel, Jacques, 4,418,283., Cl. 250-492.200.
Thorwarth, Ruediger, to Siemens Aktiengesellschaft. Device and method for repairing conductor path breaks by welding. 4,418,264., Cl. 219-78.010.
Throckmorton, Morford C.; and Sandstrom, Paul H., to Goodyear Tire & Rubber Company, The. Process for nonaqueous dispersion polymerization of butadiene in the presence of high cis-1,4-polyisoprene as a polymeric dispersing agent. 4,418,185., Cl. 526-201.000.
Thyssen Industrie Aktiengesellschaft: *See—*
Grosser, Heinrich; Dierkes, Hermann; Lutke, Hubertus; and Schreckenberg, Klaus, 4,417,499., Cl. 89-36.00K.
TI Russell Hobbs Limited: *See—*
Inskip, Michael; and Warren, Alan, 4,418,270., Cl. 219-328.000.
Tibbetts Industries, Inc.: *See—*
Sawyer, Joseph A., 4,418,246., Cl. 179-111.00E.
Tiger, Ronald L.: *See—*
Kammerzad, James A.; and Tiger, Ronald L., 4,417,376., Cl. 29-26.00A.
Tile Council of America, Inc.: *See—*
Chesney, Joseph J., Jr.; and Schaefer, Robert E., 4,418,166., Cl. 523-400.000.
Tillman, Willie, to Phillips Petroleum Company. Changing oil tubes in a carbon black reactor. 4,418,049., Cl. 423-450.000.
Timex Corporation: *See—*
Migeon, Jean P., 4,417,819., Cl. 368-67.000.
Tinebra, Roberto: *See—*
Di Tella, Vincenzo; Falbo, Dario; Minardi, Paolo; and Tinebra, Roberto, 4,417,537., Cl. 114-230.000.
Toga, Yuzo: *See—*
Kasuga, Takuzo; Toga, Yuzo; Okamoto, Ichiro; and Takahashi, Katsuhiko, 4,418,172., Cl. 524-292.000.
Tojo, Kenji: *See—*
Ikegawa, Masato; Tojo, Kenji; and Shiibayashi, Masao, 4,417,863., Cl. 418-55.000.
Tokai TRW & Co., Ltd.: *See—*
Abe, Michio; and Maeda, Naoyuki, 4,417,640., Cl. 180-142.000.
Tokico Ltd.: *See—*
Hayashida, Yoshihiro, 4,417,500., Cl. 91-369.00A.
Izumi, Shinichi, 4,417,503., Cl. 92-240.000.
Tokitsu, Tetsuya: *See—*
Tarumi, Mitio; Tokitsu, Tetsuya; and Matsumoto, Yoshio, 4,417,871., Cl. 432-1.000.
Tokumo, Akio; and Kunugi, Yoshiro, to Pioneer Electronic Corporation. Oscillator having capacitor charged and discharged by current mirror circuits. 4,418,323., Cl. 331-111.000.
Tokunaga, Yukio: *See—*
Matsushima, Noriaki; Saeki, Yukio; and Tokunaga, Yukio, 4,418,161., Cl. 523-145.000.
Tokyo Electric Co., Ltd.: *See—*
Matsuda, Susumu; Matsukura, Nobuaki; Suzuki, Masataka; and Narushima, Tsugio, 4,417,517., Cl. 101-288.000.
Tokyo Institute of Technology, The President of: *See—*
Yamaguchi, Shoichiro; and Kobayashi, Fujio, 4,418,387., Cl. 364-414.000.
Tokyo Juki Industrial Co., Ltd.: *See—*
Shiomi, Kengo, 4,417,536., Cl. 112-311.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Aoki, Kazuhide, 4,418,418., Cl. 377-79.000.
Hata, Yoogo, 4,418,392., Cl. 364-571.000.
Inagaki, Junichi, 4,418,395., Cl. 364-900.000.
Kitadate, Kenichiro; and Tanimoto, Yoshinori, 4,418,421., Cl. 378-199.000.
Nagano, Katsumi, 4,418,290., Cl. 307-355.000.
Nakamoto, Yasunobu; and Terayama, Toshiro, 4,417,446., Cl. 60-641.700.
Nishimura, Fuminobu, 4,417,544., Cl. 118-688.000.
Noda, Tominitsu, 4,418,262., Cl. 219-10.55B.
Okazaki, Takahisa, 4,417,475., Cl. 73-606.000.
Tanaka, Shigeru; and Tadakuma, Susumu, 4,418,380., Cl. 363-10.000.
Tokyo Tanabe Company, Limited: *See—*
Kamibayashi, Masato; Tsuchiya, Shinji; Hiratsuka, Kozo; and Tsuchiya, Susumu, 4,418,197., Cl. 546-256.000.
Tolbert, William R., to Monsanto Company. Cell culture pumping system. 4,417,861., Cl. 417-315.000.
Tomaru, Hisao, to Kitz Corporation. Special brass with dezincification corrosion resistance. 4,417,929., Cl. 148-433.000.
Tomita, Nobuya, to National Distillers and Chemical Corporation. Autofrettage process. 4,417,459., Cl. 72-56.000.
Toray Industries, Inc.: *See—*
Hosaka, Shuntaro; Murao, Yasuo; and Kawabata, Yasuro, 4,418,152., Cl. 436-511.000.
Kiyomura, Yoshiteru; Masuda, Yutaka; and Kojima, Tatsuji, 4,418,104., Cl. 428-15.000.
Sano, Takao; Ogasawara, Masafumi; and Tsubakimori, Hiroshi, 4,417,375., Cl. 28-272.000.
Ueda, Hiroshi; Hasegawa, Katsumi; and Imae, Masazumi, 4,417,700., Cl. 242-18.00A.
Torii & Co. Ltd.: *See—*
Fujii, Setsuro; Sugimoto, Mamoru; and Yaegashi, Takashi, 4,418,012., Cl. 260-112.50R.
Torii, Koshi; Maruyama, Toshinori; Akita, Yoshio; and Teshima, Takanori, to Nippondenso Co., Ltd. Battery charge indicating system. 4,418,311., Cl. 320-48.000.
Tornqvist, Nils-Erik: *See—*
Edebo, Lars B.; Swede, Harald G.; and Tornqvist, Nils-Erik, 4,417,926., Cl. 134-17.000.
Tosa, Akio, to Mitsutoyo Kiko Co., Ltd. Nib for forming tool for bolt heads or nuts. 4,417,464., Cl. 72-478.000.
Toshiba Heating Appliances Co., Ltd.: *See—*
Nakamura, Shigeru; Ueki, Yoshihiko; and Takachi, Hiroshi, 4,417,870., Cl. 431-33.000.

Toska Co., Ltd.: *See*—
Kato, Masami, 4,417,656., Cl. 206-346.000.

Toth-Sarudy, Eva; Ambrus, Gabor; Cseh, Gyorgy; Borvendeg, Janos; Moravcsik, Imre; and Mezey, Gabriella, to Patentbureau Danubia. 16-Amino-18,19,20-trinor-prostaglandin derivatives, and acid addition salts. 4,418,205., Cl. 560-39.000.

Tower, Stephen N.: *See*—
Gjertsen, Robert K.; Tower, Stephen N.; and Huckestein, Edgar A., 4,418,036., Cl. 376-438.000.

Towmotor Corporation: *See*—
Chelin, Charles R., 4,417,769., Cl. 308-3.00R.

Toyoda, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, to Oji Yuka Goseishi Kabushiki Kaisha. Composite film and utilization thereof. 4,418,112., Cl. 428-212.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Imai, Yutaka; Nakano, Jiro; and Ezaki, Motoharu, 4,418,288., Cl. 307-117.000.
Kako, Hiroyoshi; and Kobayashi, Nobuo, 4,417,696., Cl. 239-690.000.
Kumagai, Tadanobu; and Iwase, Yoshinobu, 4,417,880., Cl. 464-111.000.
Ohkawa, Nobushisa; and Itoh, Hiroshi, 4,417,553., Cl. 123-339.000.
Yasuda, Keiichi; Ori, Takaaki; and Nakamura, Kazumasa, 4,417,468., Cl. 73-118.000.

Trachte, Dietrich: *See*—
Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,417,693., Cl. 239-453.000.

Tremmel, Hartmut; and Bernot, Hartmut. Apparatus for collecting, transmitting and processing data stored in code, preferably in bar code. 4,418,277., Cl. 235-472.000.

Trenbeath, Steven L.; Novak, Robert W.; and Feldman, Allan M., to American Cyanamid Company. Stable isocyanic acid compositions. 4,418,047., Cl. 423-265.000.

Trepka, William J.: *See*—
Schiff, Sidney; and Trepka, William J., 4,418,234., Cl. 585-12.000.

Trick, Robert E., to Medical Engineering Corporation. Artificial sphincter. 4,417,567., Cl. 128-1.00R.

Trimmer, William S. N.; and Vilkomerson, David H. R., to Technicare Corporation. Resolution measuring device for acoustical imaging systems and method of use. 4,417,582., Cl. 128-660.000.

Trome, Edouard: *See*—
Buffon, Jean; and Trome, Edouard, 4,417,461., Cl. 72-345.000.

Trotel, Jacques, to Thomson-CSF. Microlithographic system using a charged particle beam. 4,418,283., Cl. 250-492.200.

Trouillet, Jean: *See*—
Drevet, Michel; and Trouillet, Jean, 4,417,823., Cl. 384-115.000.

Trukenbrod, Karl: *See*—
Rigler, Josef K.; Wienhofer, Ekkehard; Leithauser, Horst; and Trukenbrod, Karl, 4,418,156., Cl. 521-56.000.

Tschopp, Theodor: *See*—
Arnason, Tomas; Franke, Alwis; and Tschopp, Theodor, 4,417,958., Cl. 204-67.000.

Tshudy, James A.: *See*—
Miller, Jesse D., Jr.; Tshudy, James A.; and Unruh, Ralph E., 4,418,109., Cl. 428-142.000.

Tsubakimori, Hiroshi: *See*—
Sano, Takao; Ogasawara, Masafumi; and Tsubakimori, Hiroshi, 4,417,375., Cl. 28-272.000.

Tsuchihashi, Michihiro: *See*—
Otani, Katsuya; Suzuki, Ryo; Watanabe, Keiji; and Tsuchihashi, Michihiro, 4,418,300., Cl. 313-573.000.

Tsuchiya, Shinji: *See*—
Kamibayashi, Masato; Tsuchiya, Shinji; Hiratsuka, Kozo; and Tsuchiya, Susumu, 4,418,197., Cl. 546-256.000.

Tsuchiya, Susumu: *See*—
Kamibayashi, Masato; Tsuchiya, Shinji; Hiratsuka, Kozo; and Tsuchiya, Susumu, 4,418,197., Cl. 546-256.000.

Tsuchiya, Yoshimi: *See*—
Mizutani, Hiroshi; and Tsuchiya, Yoshimi, 4,417,893., Cl. 604-366.000.

Tsuji, Yoshitake; Mori, Nobuhiko; and Egami, Kazunari, to Nippon Electric Co. Ltd. Disparity detection apparatus. 4,418,423., Cl. 382-40.000.

Tsukiji, Yoshihiro; Maeda, Haruo; and Araki, Mikio, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for angularly positioning. 4,417,486., Cl. 74-813.00R.

Tsumura, Tetsuya: *See*—
Oshima, Nobuyasu; and Tsumura, Tetsuya, 4,417,533., Cl. 112-235.000.

Tsuwano, Haruo: *See*—
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Ueda, Takashi; and Kashiwa, Norio, to Mitsui Petrochemical Industries, Ltd. Process for preparation of ethylene polymer wax. 4,418,184., Cl. 526-125.000.

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Uezima, Osamu: *See*—
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Marulic, Walter J.; and Johnson, Kent N., 4,417,526., Cl. 105-406.00R.

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House, Cynthia B.; and Leichti, Robert J., 4,418,101., Cl. 427-393.000.

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Whitehead, William F., Jr.; Dickens, James A.; and Haynes, Benjamin C., Jr., 4,417,839., Cl. 414-303.000.
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Shambaugh, John S.; Yetman, Robert G.; and Zeltzer, Hyman, 4,418,127., Cl. 429-8.000.
Army: *See*—
Horn, Stuart B.; Wright, Richard A.; and Asher, Mark S., 4,417,448., Cl. 62-6.000.
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Perduijn, David J., 4,418,354., Cl. 346-140.00R.
Schreiber, Peter; Steenfadt, Eberhard; and Bergman, Gerard P. M., 4,418,419., Cl. 378-040.000.
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Dembeck, Kurt M., 4,417,848., Cl. 415-121.00G.

Higgs, Raymond J.; and Palmer, Leslie W., 4,417,467., Cl. 73-117.300.
Rosenbeck, William H.; Eckart, Frederick; and Gerath, Francis C., 4,418,266., Cl. 219-137.00R.
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University of Florida, The: *See—*
Dawson, William W., 4,417,581., Cl. 128-639.000.

University of Oklahoma, The Board of Regents of The: *See—*
Morris, John D.; and Hayatdavoudi, Asadollah, 4,417,899., Cl. 44-6.000.

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Miller, Jesse D., Jr.; Tshudy, James A.; and Unruh, Ralph E., 4,418,109., Cl. 428-142.000.

Untz, Reese E. Porta climb climbing tree stand. 4,417,645., Cl. 182-135.000.

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Firth, Bruce E., 4,418,223., Cl. 568-794.000.
House, David W., 4,418,225., Cl. 568-829.000.
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Usher, Peter P., to Metex Corporation. Method of producing high temperature composite seal. 4,417,733., Cl. 277-1.000.

Vaders, Dennis H., to Weyerhaeuser Company. Remotely releasable choker. 4,417,758., Cl. 294-78.00R.

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Van Horn, John W. Method for transferring energy between suspended objects. 4,417,725., Cl. 272-85.000.

Van Zeeland, Anthony J.: *See—*
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van Zyl, Ian D.: *See—*
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Vartanian, Albert V.: *See—*
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Vassiliadis, Marc: *See—*
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Vaughan, Roger, to Imperial Group plc. Monitoring a deposit on a travelling web. 4,417,934., Cl. 156-64.000.

VEB Edelstahlwerk Freital im VEB Rohrkombinat: *See—*
Esser, Fred; Klopper, Detlev; Lachner, Walter; and Kruger, Albrecht, 4,418,414., Cl. 373-24.000.

Veeder Industries Inc.: *See—*
Devanney, Raymond H., 4,418,273., Cl. 235-61.00L.

Veluswamy, Lavanga R: *See—*
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Victor Company of Japan, Ltd.: *See—*
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Cziptschirsch, Kurt; Viertel, Lothar; and Kaiser, Peter, 4,417,761., Cl. 296-97.00H.

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Vining, Paul H.; and Smith, Jimmy B., to Mansfield Carbon Products Inc.; and Peabody Development Company. Coal gasification process and apparatus. 4,417,528., Cl. 110-229.000.

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Jewett, Warren R., 4,417,586., Cl. 128-680.000.

Vogel, Wilhelm: *See—*
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Fussner, Paul; Hofmann, Karl; Komaroff, Iwan; Seifert, Kurt; Trachte, Dietrich; Vogel, Wilhelm; and Vogtmann, Hans-Jorg, 4,417,693., Cl. 239-453.000.

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von Gentzkow, Wolfgang; and Schmiedel, Manfred, to Siemens Aktiengesellschaft. Method for stabilizing organic polymers against oxidative decomposition. 4,418,170., Cl. 524-193.000.

von Hagen, Wolf R.: *See—*
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Voss, Nobert: *See—*
Crispin, Brunhart; Voss, Nobert; Pohl, Wulf-Dieter; and Thomaier, Dieter, 4,417,441., Cl. 60-251.000.

Vrielink, Hendrik, to U.S. Philips Corporation. Communication bus for a multi-source/receiver data processing system. 4,418,386., Cl. 364-200.000.

WABCO Steuerungstechnik GmbH & Co.: *See—*
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Wachi, Hiroshi: *See—*
Yamabe, Masaaki; Kojima, Gen; Wachi, Hiroshi; and Kodama, Shun-ichi, 4,418,186., Cl. 526-247.000.

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Wakamatsu, Atsuyuki; and Tsuwano, Haruo, to Daiwa Can Company. Apparatus for automatically packing end closures for cans in paper bags. 4,417,435., Cl. 53-532.000.

Waldstrom, Ejvind; and Kaufmann, Gerhard, to O.G. Hoyer A/S. Dispenser systems. 4,417,610., Cl. 141-91.000.

Walker, Frank S. Bathroom fixture. 4,417,362., Cl. 4-606.000.

Wallace, Duane W., to Reed Rock Bit Company. Drill bit and method of manufacture. 4,417,629., Cl. 175-365.000.

Wallin, Kay, to Sprinter System AB. Method and apparatus for erecting a carton tray. 4,417,882., Cl. 493-174.000.

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Walter, John: *See—*
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Walter, Richard P., to Bendix Corporation, The. Feed and drain line damping in a fuel delivery system. 4,417,557., Cl. 123-467.000.

Wamser, Christian A.: *See—*
Kuo, Vincent H. S.; and Wamser, Christian A., 4,417,996., Cl. 252-175.000.

Warning, Norman E. Air powered door operator. 4,417,418., Cl. 49-199.000.

Warren, Alan: *See—*
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Washburn, Harry G., to Teepak, Inc. Apparatus for and process of controlled sub-volume filling of casings. 4,417,368., Cl. 17-49.000.

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Watanabe, Keiji: *See—*
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Wear, Frederick C.: *See—*
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Weber, Otto; Ohnsmann, Klaus; and Christ, Ferdinand. Method and apparatus for checking the weight of consignments assembled in containers. 4,417,630., Cl. 177-1.000.

Wechsler, Hans G., to Schwamm, Horst; and Pessei, Friedbert. Vehicle for coasting down in a channel-shaped roller slide. 4,417,740., Cl. 280-87.010.

Wegener, Jack. Dynamic gas pressured jacking structure with improved load stability and air pallet employing same. 4,417,639., Cl. 180-125.000.

Weidner, Peter: *See—*
Siebert, Rainer; Stutzle, Dietmar; and Weidner, Peter, 4,417,518., Cl. 102-212.000.

Weiner, Todd D. Tennis practice apparatus. 4,417,730., Cl. 273-29.00A.

Weinhold, Dennis G. Quick retrieve cord reel. 4,417,703., Cl. 242-107.120.

Weisner, Ralph M. Integrating densitometer. 4,417,818., Cl. 356-404.000.

Weisrock, William P.; and McCarthy, Edward F., to Standard Oil Company. *Xanthomonas campestris* ATCC 31601 and process for use. 4,418,145., Cl. 435-104.000.

Wells, Martin A.: *See*—
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Weltmer, William R., Jr., to Airco, Inc. Gas separation process. 4,417,909., Cl. 62-12.000.

Werner, Alan J., Jr., to Xerox Corporation. High voltage comparator for photoreceptor voltage control. 4,417,804., Cl. 355-14.0CH.

Wertheimer, Seev, to Iscar Ltd. Rotary slot cutting tools. 4,417,833., Cl. 407-61.000.

Western Electric Co., Inc.: *See*—
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Westfalia Separator AG: *See*—
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Westinghouse Electric Corp.: *See*—
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Weyerhaeuser Company: *See*—
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Whallon, William P., Jr.: *See*—
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Whatley, Francis: *See*—
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Wheadon, Ellis G.: *See*—
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Wheelock, Kenneth S.: *See*—
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Bresner, Robert A., 4,417,457., Cl. 68-17.00A.

Whitaker, Robert F. Auxiliary wheel support for load carrying vehicles. 4,417,739., Cl. 280-81.00A.

White, Carl R., to Mallinckrodt, Inc. Method for producing fluoronitrobenzene compounds. 4,418,229., Cl. 568-938.000.

White, Lionel S., Jr.: *See*—
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Whitesel, Terry L.: *See*—
Cygnor, John E.; Whitesel, Terry L.; and Mosure, Duane C., 4,417,851., Cl. 415-150.000.

Wienhofer, Ekkehard: *See*—
Rigler, Josef K.; Wienhofer, Ekkehard; Leithauser, Horst; and Trukenbrod, Karl, 4,418,156., Cl. 521-56.000.

Wilkinson, Calvin L., to Boeing Aerospace Company. Integral purged multi-layer insulation design. 4,417,428., Cl. 52-172.000.

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Williams, Alan: *See*—
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Williams, Billy M., to Dow Chemical Company, The. Process for preparation of N-heterocyclic compounds. 4,418,201., Cl. 548-579.000.

Williams, Gerard J.: *See*—
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Williams, Waymon D.; and Moore, Edward A. Automatic teller security apparatus. 4,417,527., Cl. 109-2.000.

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Willis, Edwin: *See*—
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Wilson, Albert H., to Thomas & Betts Corporation. PCB-Mountable connector for terminating flat cable. 4,417,779., Cl. 339-75.0MP.

Windpowered Machines Ltd.: *See*—
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Wine, Charles M., to RCA Corporation. Video player apparatus having caption generator. 4,418,364., Cl. 358-336.000.

Winecoff, John E. Apparatus for cutting used tires. 4,417,492., Cl. 82-46.000.

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Knowles, Henry L.; and Winningham, James P., 4,417,669., Cl. 221-26.000.

Wion, Donald A.: *See*—
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Witt, Ronald A., to Falk Corporation, The. Diaphragm mounted gear drive detuner. 4,417,482., Cl. 74-409.000.

Wohlfeil, Gerhard, to Jagenberg Werke AG. Coating apparatus with air-nozzle arrangement. 4,417,540., Cl. 118-63.000.

Wolens, John: *See*—
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Wong, Dennis W. Diagnostic compositions and method for radiologic imaging of fibrinogen deposition in the body. 4,418,052., Cl. 424-1.100.

Wood, John D.: *See*—
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Woodard, Kenneth E., Jr.: *See*—
Kadija, Igor V.; Woodard, Kenneth E., Jr.; and Justice, David D., 4,417,959., Cl. 204-98.000.

Woodman, Brenda J.: *See*—
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Wozniacki, Roger M., to International Paper Company. Octagon tray with reinforced handhole. 4,417,686., Cl. 229-52.00B.

Wren, Douglas L., to Syntex (U.S.A.) Inc. 9-Deoxy-9-methylene derivatives of (dl)-16-phenoxy and 16-phenoxy substituted prostatriene compounds. 4,418,206., Cl. 560-55.000.

Wright, James O. B.: *See*—
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Logullo, Francis M., Sr.; and Wu, Yun-Tai, 4,418,164., Cl. 523-207.000.

Wurlitzer Company, The: *See*—
Machanian, William V., 4,417,496., Cl. 84-1.270.

Xerox Corporation: *See*—
Eisemann, Richard E., 4,417,801., Cl. 355-3.0SH.
Forbes II, Richard L., 4,417,802., Cl. 355-3.0DD.
Harrison, Joel N., 4,418,370., Cl. 360-106.000.
Werner, Alan J., Jr., 4,417,804., Cl. 355-14.0CH.

Yaegashi, Takashi: *See*—
Fujii, Setsuro; Sugimoto, Mamoru; and Yaegashi, Takashi, 4,418,012., Cl. 260-112.50R.

Yaghmaie, Farrokh; and McKeon, Ronald J., to Texaco Inc. Process for making and composition of low viscosity coal-water slurries. 4,417,902., Cl. 44-51.000.

Yamabe, Masaaki; Kojima, Gen; Wachi, Hiroshi; and Kodama, Shunichi, to Asahi Glass Company Ltd. Copolymer for fluorine-containing elastomer having excellent low temperature resistance and alcohol resistance. 4,418,186., Cl. 526-247.000.

Yamada, Kunio. Hollow metal golf club head and club incorporating it. 4,417,731., Cl. 273-167.00H.

Yamaguchi, Kenzo; Ichinaka, Teruo; Ikegami, Tadao; and Kumagai, Isao, to Chlorine Engineers Corp. Ltd. Electrolytic cell for ion exchange membrane method. 4,417,970., Cl. 204-257.000.

Yamaguchi, Shoichiro; and Kobayashi, Fujio, to Tokyo Institute of Technology, The President of. Method of reconstructing a computed tomographic image from a single X-ray projection. 4,418,387., Cl. 364-414.000.

Yamaguchi, Toshibumi: *See*—
Kawasaki, Kikuo; Yoshida, Kazuo; Nonoyama, Nobuo; Yamaguchi, Toshibumi; Hasegawa, Toshio; and Okamura, Jitsuo, 4,417,671., Cl. 222-56.000.
Yamaji, Tadao; Nakajima, Toshi; and Kashi, Takeshi, to Kubota, Ltd. Pipe joint for preventing separation. 4,417,754., Cl. 285-104.000.
Yamamoto, Hisao: *See*—
Kojima, Atsuyuki; Irie, Tsunemasa; Harada, Shuichi; Kameno, Yoshito; Katsube, Junki; and Yamamoto, Hisao, 4,418,079., Cl. 424-330.000.
Yamamoto, Noboru, to Mitsumoto Coffee Co., Ltd. Regular coffee set. 4,417,504., Cl. 99-306.000.
Yamanaka, Masaaki: *See*—
Toyoda, Takashi; Ohba, Yozo; and Yamanaka, Masaaki, 4,418,112., Cl. 428-212.000.
Yamawaki, Masami: *See*—
Kasuga, Takuzo; Ikenaga, Yukio; and Yamawaki, Masami, 4,418,162., Cl. 523-205.000.
Yamazaki, Noboro: *See*—
Numata, Satoshi; Nakatani, Kiyoshi; Yamazaki, Noboro; and Yuasa, Teruo, 4,418,220., Cl. 568-734.000.
Yamazaki, Shunpei. Member for electrostatic photocopying with $Si_3N_{4-x}(0<x<4)$. 4,418,132., Cl. 430-57.000.
Yamazaki, Yoshio; Nakamura, Ken; and Inowa, Shigeru, to Konishiroku Photo Industry Co., Ltd. Cleaning apparatus for recording apparatus. 4,417,807., Cl. 355-15.000.
Yan, Tsoung Y., to Mobil Oil Corporation. Ion exchange process using resins of high loading capacity, high chloride tolerance and rapid elution for uranium recovery. 4,418,042., Cl. 423-7.000.
Yasuda, Keiichi; Ori, Takaaki; and Nakamura, Kazumasa, to Nippondenso Co., Ltd.; and Toyota Jidosha Kogyo Kabushiki Kaisha. Switching device for detecting rotational positions of rotary shaft. 4,417,468., Cl. 73-118.000.
Yasuda, Sinichi; Kurohara, Takayuki; and Taguro, Akira, to Koei Chemical Co., Ltd. Process for treating aqueous solutions containing phenols. 4,418,221., Cl. 568-757.000.
Yasuda, Yoshiko: *See*—
Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,418,284., Cl. 250-578.000.
Yasuhara, Seishi, to Nissan Motor Co., Ltd. Method and apparatus for automatically changing and disposing of used engine oil. 4,417,561., Cl. 123-575.000.
Yasui, Tsuyoshi: *See*—
Kitamura, Minoru; Koyama, Shinji; Ito, Shuzo; Ohgami, Masahiko; Matsui, Hideo; Hirose, Isamu; Fujimoto, Hideaki; and Yasui, Tsuyoshi, 4,417,723., Cl. 266-265.000.
Yasukata, Eguchi, to Janome Sawing Machine Industry Co., Ltd. Suturing instrument for surgical operation. 4,417,532., Cl. 112-169.000.
Yatsunami, Kenrow, to Sharp Kabushiki Kaisha. Optical bar code reader. 4,418,276., Cl. 235-462.000.
Yetman, Robert G.: *See*—
Shambaugh, John S.; Yetman, Robert G.; and Zeltzer, Hyman, 4,418,127., Cl. 429-8.000.
Yonehara, Hiroyuki: *See*—
Ueda, Yoshihiro; Kimura, Yoshikazu; Yonehara, Hiroyuki; and Tanabe, Kenjiro, 4,417,810., Cl. 355-74.000.
Yonezawa, Taketoshi: *See*—
Ogawa, Kazufumi; Kondo, Shigeru; Yasuda, Yoshiko; Yonezawa, Taketoshi; and Kitahiro, Isamu, 4,418,284., Cl. 250-578.000.
Yoshida, Hajime, to Hajime Industries Ltd. Noise detection apparatus. 4,418,341., Cl. 340-635.000.
Yoshida, Kazuo: *See*—
Kawasaki, Kikuo; Yoshida, Kazuo; Nonoyama, Nobuo; Yamaguchi, Toshibumi; Hasegawa, Toshio; and Okamura, Jitsuo, 4,417,671., Cl. 222-56.000.
Yoshida, Kiyoshi: *See*—
Nakada, Akira; Okamoto, Eisaku; and Yoshida, Kiyoshi, 4,417,494., Cl. 84-1.030.
Yoshimi, Akiro; Kamiya, Michihiko; and Moriya, Mitsutoshi, to Nippondenso Co., Ltd. Air-conditioner control system for vehicles. 4,417,618., Cl. 165-12.000.
Yoshioka, Takeo: *See*—
Tanaka, Hiroshi; Yoshioka, Takeo; Shimauchi, Yasutaka; Oki, Toshikazu; Ishikura, Tomoyuki; Takeuchi, Tomio; and Umezawa, Hamao, 4,418,192., Cl. 536-6.400.
Yost, Richard J., to Combustion Engineering, Inc. Cover for carbon bake pit. 4,418,107., Cl. 428-138.000.
Young, Ian R.; Hounsfield, Godfrey N.; and Burl, Michael, to Picker International Limited. Nuclear magnetic resonance apparatus. 4,418,316., Cl. 324-309.000.
Young, Peter L.; Stein, Barry F.; and Sheppard, John E., to Sperry Corporation. Method of making planarized Josephson junction devices. 4,418,095., Cl. 427-63.000.
Yuasa, Teruo: *See*—
Numata, Satoshi; Nakatani, Kiyoshi; Yamazaki, Noboro; and Yuasa, Teruo, 4,418,220., Cl. 568-734.000.
Yueh, Mao; and Rashbaum, Stephan A., to Quaker Oats Company, The. Natural red coloring prepared from wheat and barley substrates. 4,418,080., Cl. 426-18.000.
Yueh, Mao: *See*—
Rashbaum, Stephan A.; and Yueh, Mao, 4,418,081., Cl. 426-18.000.
Zabec, Glenn: *See*—
Bernecki, Harry F.; Skuza, Voytech T.; Dulin, Kerry; Sridharan, Sri P.; Zabec, Glenn; and Edgell, James E., 4,417,681., Cl. 227-8.000.
Zabielski, Kenneth: *See*—
Bacehowski, David; Measells, Paul; and Zabielski, Kenneth, 4,417,753., Cl. 285-21.000.
Zacharias, Ellis M., Jr., to Mapco, Inc. Dampened ultrasonic transducer. 4,417,480., Cl. 73-861.180.
Zahnradfabrik Friedrichshafen, AG: *See*—
Elser, Dieter, 4,417,501., Cl. 91-375.00A.
Zaiser, Wolfgang: *See*—
Gaus, Hermann; Zaiser, Wolfgang; Pickard, Jurgen; and Eltze, Georg, 4,417,484., Cl. 74-688.000.
Zaner, Clifford: *See*—
Andersen, Harold W.; Andersen, Shirley R.; Zaner, Clifford; and Harrison, Charles H., 4,418,055., Cl. 424-126.000.
Zannucci, Joseph S.; and Pruett, Wayne P., to Eastman Kodak Company. Melamine group containing ultraviolet stabilizers and their use in organic compositions. 4,418,000., Cl. 252-403.000.
Zannucci, Joseph S.; and Pruett, Wayne P., to Eastman Kodak Company. Melamine group containing ultraviolet stabilizers and their use in organic compositions III. 4,418,001., Cl. 252-403.000.
Zannucci, Joseph S.; and Pruett, Wayne P., to Eastman Kodak Company. Melamine group containing ultraviolet stabilizers and their use in organic compositions II. 4,418,002., Cl. 252-403.000.
Zeltzer, Hyman: *See*—
Shambaugh, John S.; Yetman, Robert G.; and Zeltzer, Hyman, 4,418,127., Cl. 429-8.000.
Zengel, Hans; and Bergfeld, Manfred, to Akzona Incorporated. Preparation of trans-cyclohexane-1,4-disulphonyl urea. 4,418,211., Cl. 564-40.000.
Zenios, Marios C.: *See*—
Stevenson, Thomas T.; and Zenios, Marios C., 4,417,469., Cl. 73-119.00A.
Zenith Radio Corporation: *See*—
Hager, Robert E.; and Moss, Laurence H., 4,418,279., Cl. 250-201.000.
Zenk, Robert E.: *See*—
Kealy, Joanne P.; and Zenk, Robert E., 4,418,120., Cl. 428-343.000.
Ziegler, Joseph: *See*—
Heine, Christian H., Jr.; McGaw, Robert W.; Wetzel, W. Edwin, Jr.; and Ziegler, Joseph, 4,417,928., Cl. 148-144.000.
Zillich, Pal: *See*—
Cserey, Laszlo; Horvath, Gabor; Szabados, Tamas; Simonkay, Sandor; Sztipanovits, Janos; Vimlati, Pal; Istvan, Zoltan; and Zillich, Pal, 4,417,812., Cl. 356-40.000.
Cserey, Laszlo; Vimlati, Pal; and Zillich, Pal, 4,418,313., Cl. 324-71.100.
Zip-Rib, Inc.: *See*—
Commins, Alfred D.; and Kindelvich, Frederick T., 4,417,431., Cl. 52-715.000.
Zlesak, Ivan: *See*—
Beranek, Ivan; Kyral, Josef; Uhlir, Miroslav; and Zlesak, Ivan, 4,417,923., Cl. 75-257.000.
Zscheile, John W., Jr., to Sperry Corporation. Matched filter spread spectrum code recovery apparatus. 4,418,393., Cl. 364-724.000.
Zumwalt, Gary L.: *See*—
Medlin, William L.; Masse', Lucien; and Zumwalt, Gary L., 4,417,621., Cl. 166-249.000.
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, to Ciba-Geigy Corporation. Tricyclic imidyl derivatives. 4,418,199., Cl. 548-451.000.
Zweifel, Hans; Schilling, Walter; Storni, Angelo; and Bellus, Daniel, to Ciba-Geigy Corporation. Tricyclic imidyl derivatives. 4,418,200., Cl. 548-451.000.
Zwezerynen, Johannes C. W., to Aico Manufacturing Co. Limited. Conveyor. 4,417,653., Cl. 198-718.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 29TH DAY OF NOVEMBER, 1983

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Casco Products Division of Sun Chemical Corporation: *See*—
Fenn, Lawrence E.; and Sperry, Charles R., Re. 31,452., Cl. 219-265.000.

Fenn, Lawrence E.; and Sperry, Charles R., to Casco Products Division of Sun Chemical Corporation. Quick-acting electric cigar lighter. Re. 31,452., Cl. 219-265.000.

JSJ Corporation: *See*—
Osborn, Charles, Re. 31,451., Cl. 74-476.000.

Micro Motion, Inc.: *See*—
Smith, James E., Re. 31,450., Cl. 73-861.380.

Osborn, Charles, to JSJ Corporation. Manual transmission shifter for operating a transmission with elongated actuators such as flexible cables. Re. 31,451., Cl. 74-476.000.

Smith, James E., to Micro Motion, Inc. Method and structure for flow measurement. Re. 31,450., Cl. 73-861.380.

Sperry, Charles R.: *See*—
Fenn, Lawrence E.; and Sperry, Charles R., Re. 31,452., Cl. 219-265.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

DuMont, Jacques; and Romagne, Jacques, to Ethicon, Inc. Heart pacer lead wire with break-away needle. B1 4,010,756., 11-29-83, Cl. 128-786.000.

Ethicon, Inc.: *See*—
DuMont, Jacques; and Romagne, Jacques, B1 4,010,756., Cl. 128-786.000.

Graver Tank & Mfg. Co., Inc.: *See*—
Kinghorn, John S.; Wagoner, Robert B.; and Turala, Alfred J., B1 4,116,358., Cl. 220-222.000.

Kinghorn, John S.; Wagoner, Robert B.; and Turala, Alfred J., to Graver Tank & Mfg. Co., Inc. Weather and vapor seal for storage tank. B1 4,116,358., 11-29-83, Cl. 220-222.000.

Orchard, Edgar L., to Orco Sales Co. Inc. Box construction. B1 4,265,393., 11-29-83, Cl. 229-40.000.

Orco Sales Co. Inc.: *See*—
Orchard, Edgar L., B1 4,265,393., Cl. 229-40.000.

Romagne, Jacques: *See*—
DuMont, Jacques; and Romagne, Jacques, B1 4,010,756., Cl. 128-786.000.

Turala, Alfred J.: *See*—
Kinghorn, John S.; Wagoner, Robert B.; and Turala, Alfred J., B1 4,116,358., Cl. 220-222.000.

Wagoner, Robert B.: *See*—
Kinghorn, John S.; Wagoner, Robert B.; and Turala, Alfred J., B1 4,116,358., Cl. 220-222.000.

LIST OF DESIGN PATENTEES

A&E Products Group, Inc.: *See*—
Samuels, Howard, 271,552., Cl. D6-252.000.

Albinson, Fred: *See*—
Albinson, William; and Albinson, Fred, 271,616., Cl. D23-128.000.

Albinson, William; and Albinson, Fred. Stove front. 271,616., 11-29-83, Cl. D23-128.000.

Alpine Enterprises, Inc.: *See*—
Powell, Clyde W., 271,566., Cl. D10-2.000.
Powell, Clyde W., 271,567., Cl. D10-26.000.

Alsup, W. Homer. Jeans or the like. 271,537., 11-29-83, Cl. D2-28.000.

Arioka, Takanori: *See*—
Kitada, Toyohiko; Tamura, Minoru; and Arioka, Takanori, 271,568., Cl. D10-46.000.

Arrigoni, David M. Control station. 271,584., 11-29-83, Cl. D13-12.000.

Ashcroft, James E. Compass. 271,590., 11-29-83, Cl. D19-38.000.

Aspenwall, John E. Gun stock. 271,607., 11-29-83, Cl. D22-6.000.

Babcock & Wilcox Company, The: *See*—
Lui, Peter K.; Scheib, Thomas; and Whaley, George S., 271,569., Cl. D10-49.000.

Badzinski, Richard D.; and Nigel, George G., to Shaft Lok, Inc. Propeller shaft lock housing. 271,583., 11-29-83, Cl. D12-317.000.

Bakken, Christian S.; and Ronhaug, Jan B., to Norsk Hydro a.s. Metal bar. 271,588., 11-29-83, Cl. D15-144.000.

Bauer, Harold F., to Conchemco, Incorporated. Windshield cleaner. 271,626., 11-29-83, Cl. D32-42.000.

Bauer, Harold F., to Conchemco, Incorporated. Windshield cleaner. 271,627., 11-29-83, Cl. D32-42.000.

Bauer, Harold F., to Conchemco, Incorporated. Windshield cleaner. 271,628., 11-29-83, Cl. D32-49.000.

Baxter Travenol Laboratories, Inc.: *See*—
Slater, Glenn L., 271,565., Cl. D9-370.000.

Beanland, Elizabeth M. Doll. 271,597., 11-29-83, Cl. D21-166.000.

Belland, Terrance C.; and Mackrell, William B., to Cornelius Company, The. Actuator handle for a beverage dispensing valve. 271,558., 11-29-83, Cl. D7-398.000.

Bergmans, Charles, to Clarks of England, Inc. Shoe sole. 271,539., 11-29-83, Cl. D2-320.000.

Berner, James H. Physical exerciser. 271,603., 11-29-83, Cl. D21-195.000.

Blanchard, Russell O.: *See*—
Minick, Harold N.; Blanchard, Russell O.; and Townsend, Donald L., 271,612., Cl. D22-19.000.

Booher, D.le R.: *See*—
Prikkel, John, III; Booher, Dale R.; and Killin, Jeffrey R., 271,615., Cl. D23-127.000.

Bowen, Robert F.; Herbst, Walter B.; and Martel, Thomas J., to Raytheon Company. Microwave cooking utensil. 271,556., 11-29-83, Cl. D7-352.000.

Bowsher, Robert L. Shoe rack. 271,547., 11-29-83, Cl. D6-153.000.

Bowsher, Robert L. Shoe rack. 271,548., 11-29-83, Cl. D6-153.000.

Bowsher, Robert L. Shoe rack. 271,549., 11-29-83, Cl. D6-153.000.

Bradford, Wendell L., to Stang Hydronics Inc. Air dome for pumping and dewatering systems. 271,585., 11-29-83, Cl. D15-7.000.

Brown, Worthy H. Projectile for a shotgun. 271,609., 11-29-83, Cl. D22-10.000.

Bulgari, Gianni. Necklace. 271,574., 11-29-83, Cl. D11-13.000.

Cain, David E., to Halliburton Company. High temperature, high pressure filter press for testing drilling fluids or similar apparatus. 271,570., 11-29-83, Cl. D10-83.000.

Calgon Corporation: *See*—
Kleman, Gary B., 271,544., Cl. D6-95.000.

Canon Kabushiki Kaisha: *See*—
Hirata, Takashi; Motoyoshi, Junichi; Kobata, Yoshihiro; and Rachi, Masahiro, 271,589., Cl. D18-1.000.

Chino, Kiyozumi: *See*—
Wada, Seihei; and Chino, Kiyozumi, 271,573., Cl. D10-106.000.

Clark, Susan C.: *See—*
Stone, Lorraine D.; and Clark, Susan C., 271,593., Cl. D21-59.000.
Clarks of England, Inc.: *See—*
Bergmans, Charles, 271,539., Cl. D2-320.000.
Coleco Industries, Inc.: *See—*
Mercurio, Frank; and Ratkiewich, Richard H., 271,594., Cl. D21-80.000.
Collison, Alan, to Dobson Park Industries, Limited. Combined toy typewriter and loudspeaker therefor. 271,596., 11-29-83, Cl. D21-127.000.
Conchemco, Incorporated: *See—*
Bauer, Harold F., 271,626., Cl. D32-42.000.
Bauer, Harold F., 271,627., Cl. D32-42.000.
Bauer, Harold F., 271,628., Cl. D32-49.000.
Cooper, Howard. Bottle. 271,564., 11-29-83, Cl. D9-325.000.
Corey, Charles D.; and Pia, Francesco A. Marine rescue and recreational board. 271,606., 11-29-83, Cl. D21-228.000.
Cornelius Company, The: *See—*
Belland, Terrance C.; and Mackrell, William B., 271,558., Cl. D7-398.000.
Corning Glass Works: *See—*
Herrmann, Raymond J., 271,619., Cl. D24-29.000.
Ziver, Garo M., 271,621., Cl. D26-35.000.
Creelman, R. Douglas, to Georgian Manufacturing Ltd. Signalling device for detecting waves in a body of water. 271,572., 11-29-83, Cl. D10-106.000.
Culkin, Susan J. Figurine. 271,577., 11-29-83, Cl. D11-161.000.
Culkin, Susan J. Figurine. 271,578., 11-29-83, Cl. D11-161.000.
Daenen, Robert H. C. M.; and Herlow, Erik, to Dart Industries Inc. Ice container. 271,555., 11-29-83, Cl. D7-78.000.
Dart Industries Inc.: *See—*
Daenen, Robert H. C. M.; and Herlow, Erik, 271,555., Cl. D7-78.000.
Grusin, Gerald M., 271,554., Cl. D7-40.000.
DeBoer, Jack P., to Residence Inn Corp., The. Building structure. 271,620., 11-29-83, Cl. D25-17.000.
DeFuccio, Robert, to Simmons Universal Corporation. Chair. 271,543., 11-29-83, Cl. D6-73.000.
De Lozada, Rudy. Western hat. 271,538., 11-29-83, Cl. D2-253.000.
Dobson Park Industries, Limited: *See—*
Collison, Alan, 271,596., Cl. D21-127.000.
Eastern Company, The: *See—*
Weinerman, Lee S., 271,562., Cl. D8-338.000.
Eli Lilly and Company: *See—*
Simpson, Barbara E.; and Gervais, Norman A., 271,623., Cl. D28-2.000.
Emerson Electric Co.: *See—*
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Energy Vent, Inc.: *See—*
Prikkel, John, III; Booher, Dale R.; and Killin, Jeffrey R., 271,615., Cl. D23-127.000.
Esposito, Dominic: *See—*
Esposito, Michael; and Esposito, Dominic, 271,605., Cl. D21-226.000.
Esposito, Michael; and Esposito, Dominic. Cap for skate wheel or similar article. 271,605., 11-29-83, Cl. D21-226.000.
Finley, Randall B. Rifle sling. 271,608., 11-29-83, Cl. D22-7.000.
Foster, Lorrie E. Child's doll. 271,599., 11-29-83, Cl. D21-171.000.
Gehrie, Charles S., to Presto Lock, Inc. Rotary dial for combination locks and the like. 271,563., 11-29-83, Cl. D8-343.000.
Georgian Manufacturing Ltd.: *See—*
Creelman, R. Douglas, 271,572., Cl. D10-106.000.
Gervais, Norman A.: *See—*
Simpson, Barbara E.; and Gervais, Norman A., 271,623., Cl. D28-2.000.
Gillette Company, The: *See—*
Gray, Michael J., 271,625., Cl. D28-48.000.
Gray, Michael J., to Gillette Company, The. Razor handle. 271,625., 11-29-83, Cl. D28-48.000.
Grusin, Gerald M., to Dart Industries Inc. Container closure or the like. 271,554., 11-29-83, Cl. D7-40.000.
Halliburton Company: *See—*
Cain, David E., 271,570., Cl. D10-83.000.
Hatcher, Robert L.: *See—*
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Herbst, Walter B.: *See—*
Bowen, Robert F.; Herbst, Walter B.; and Martel, Thomas J., 271,556., Cl. D7-352.000.
Herlow, Erik: *See—*
Daenen, Robert H. C. M.; and Herlow, Erik, 271,555., Cl. D7-78.000.
Herrmann, Raymond J., to Corning Glass Works. Specimen cup assembly for a clinical chemistry analyzer. 271,619., 11-29-83, Cl. D24-29.000.
Hirata, Takashi; Motoyoshi, Junichi; Kobata, Yoshihiro; and Rachi, Masahiro, to Canon Kabushiki Kaisha. Typewriter. 271,589., 11-29-83, Cl. D18-1.000.
Holloway, Doris A. Pouch for smoking materials. 271,622., 11-29-83, Cl. D27-44.000.
Hoover, Charles C.: *See—*
Wood, Forrest L.; Wood, Mickey C.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 271,579., Cl. D12-300.000.
Wood, Forrest L.; Wood, Mickey C.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 271,580., Cl. D12-300.000.
Wood, Forrest L.; Wood, Mickey C.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 271,581., Cl. D12-300.000.
Huzinec, Robert J., to Warner-Lambert Company. Two color chewing gum. 271,534., 11-29-83, Cl. D1-12.000.
Huzinec, Robert J., to Warner-Lambert Co. Two color chewing gum. 271,535., 11-29-83, Cl. D1-12.000.
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Taylor, Ottilia Z.; and Lazar, Janos J., 271,592., Cl. D21-59.000.
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Ise, Yoji, to Myotoku Ltd. Combined vacuum pump and control valve therefor. 271,586., 11-29-83, Cl. D15-7.000.
Ise, Yoji, to Myotoku Ltd. Combined vacuum pump and control valve therefor. 271,587., 11-29-83, Cl. D15-7.000.
Jensen, Dale H.: *See—*
Wood, Forrest L.; Wood, Mickey C.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 271,579., Cl. D12-300.000.
Wood, Forrest L.; Wood, Mickey C.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 271,580., Cl. D12-300.000.
Wood, Forrest L.; Wood, Mickey C.; Jensen, Dale H.; Poley, Kenneth P.; Hoover, Charles C.; and Wilson, Gary L., 271,581., Cl. D12-300.000.
Kesh, Seroun. Skirt hanger. 271,553., 11-29-83, Cl. D6-254.000.
Killin, Jeffrey R.: *See—*
Prikkel, John, III; Booher, Dale R.; and Killin, Jeffrey R., 271,615., Cl. D23-127.000.
Kitada, Toyohiko; Tamura, Minoru; and Arioka, Takanori, to Tokyo Keiki Company Limited. Ultrasonic wave thickness meter. 271,568., 11-29-83, Cl. D10-46.000.
Kleman, Gary B., to Calgon Corporation. Dispenser for fluid or semi-fluid materials. 271,544., 11-29-83, Cl. D6-95.000.
Knowles, Lloyd C. Catamaran anti-pitch hydrofoil. 271,582., 11-29-83, Cl. D12-317.000.
Kobata, Yoshihiro: *See—*
Hirata, Takashi; Motoyoshi, Junichi; Kobata, Yoshihiro; and Rachi, Masahiro, 271,589., Cl. D18-1.000.
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192 R 4,417,968
252 4,417,969
257 4,417,970
305 4,417,971

CLASS 206

45.25 4,417,655
346 4,417,656
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500 4,417,660
625 4,417,661

CLASS 208

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188 4,417,976
262 4,417,977

CLASS 209

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522 4,417,662
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CLASS 210

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209 4,417,981
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527 4,417,983
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126 4,418,407
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536 4,418,087
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572 4,418,089
578 4,418,090
580 4,418,091
600 4,418,092

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76 4,418,096
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DESIGN PATENTS

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06 : 5,146

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25 : 5,145

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